JPRS 75544

22 April 1980

China Report

AGRICULTURE

No. 79

FBIS FOREIGN BROADCAST INFORMATION SERVICE

NOTE

JPRS publications contain information primarily from foreign newspapers, periodicals and books, but also from news agency transmissions and broadcasts. Materials from foreign-language sources are translated; those from English-language sources are transcribed or reprinted, with the original phrasing and other characteristics retained.

Headlines, editorial reports, and material enclosed in brackets [] are supplied by JPRS. Processing indicators such as [Text] or [Excerpt] in the first line of each item, or following the last line of a brief, indicate how the original information was processed. Where no processing indicator is given, the information was summarized or extracted.

Unfamiliar names rendered phonetically or transliterated are enclosed in parentheses. Words or names preceded by a question mark and enclosed in parentheses were not clear in the original but have been supplied as appropriate in context. Other unattributed parenthetical notes within the body of an item originate with the source. Times within items are as given by source.

The contents of this publication in no way represent the policies, views or attitudes of the U.S. Government.

PROCUREMENT OF PUBLICATIONS

JPRS publications may be ordered from the National Technical Information Service, Springfield, Virginia 22161. In ordering, it is recommended that the JPRS number, title, date and author, if applicable, of publication be cited.

Current JPRS publications are announced in Government Reports Announcements issued semi-monthly by the National Technical Information Service, and are listed in the Monthly Catalog of U.S. Government Publications issued by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Indexes to this report (by keyword, author, personal names, title and series) are available from Bell & Howell, Old Mansfield Road, Wooster, Ohio 44691.

Correspondence pertaining to matters other than procurement may be addressed to Joint Publications Research Service, 1000 North Glebe Road, Arlington, Virginia 22201.

JPRS 75544

22 April 1980

CHINA REPORT
AGRICULTURE
No. 79

CONTENTS

I. GENERAL INFORMATION 1

National

Changes in Farm Economy Proposed
(Yu Guoyao; GUANGMING RIBAO, 17 Jan 80) 1

Financial Matters of People's Communes Discussed
(NONGCUN GONGZUO TONGXUN, 5 Feb 79) 3

Food Grain Pricing
Rewards for Quota Over-fulfillment
Debts to Communes, Brigades
Over-distribution in Production Teams

Research on Natural Energy Resources for Farm Use Proposed
(Jian Ying; GUANGMING RIBAO, 14 Mar 80) 13

Synthetic Ammonia Plants Making Innovations
(NONGCUN KEXUE SHIYAN, No 9, 1979) 15

Measures To Produce Per Mu Yield of One Thousand Jin of Wheat
(NONGCUN KEXUE SHIYAN, No 9, 1979) 17

Briefs
Electronic Monitor for Sowing 19
General Purpose Vegetable Seeder 19
005 Soybean Nodule Bacterial Strain 20
Tiller-Seeder for Corn 20
Grasslands Survey 21

CONTENTS (Continued)

Gansu

Letter Cites Gansu Success in Applying Science
(GUANGMING RIBAO, 14 Mar 80)........................ 22

Guangdong

Planning Year's Rice Crop: Various Varieties Discussed
(NANFANG RIBAO, 29 Jan 80)........................... 24

Editor's Note
Rational Matching of Rice Varieties
New Rice Varieties

Guangdong Plans Modern Rice Research Center
(NANFANG RIBAO, 25, 29 Feb 80)........................ 28

IRRI Help for Center
Ministry of Agriculture Aid

New Guangdong Rice Varieties Discussed
(Zhou Xun; NANFANG RIBAO, 11 Jan 80)................. 30

Rice, Water, Irrigation Discussed
(Jiang Bin; NANFANG RIBAO, 21 Feb 80)................ 32

Rice Sowing Rates Given
(Li Ye; NANFANG RIBAO, 28 Feb 80).................... 34

Measures To Protect Rice From Cold Damage Discussed
(NANFANG RIBAO, 3 Feb 80)............................ 36

Editor's Note
New Method for Hastening Sprouting
Early Planting To Avoid Fall Cold
Use of Nylon Film

Province Sets Record in Peanut Output
(Huang Xiangguang; NANFANG RIBAO, 16 Jan 80)......... 41

'NANFANG RIBAO' Comments on Year-End Distribution
(NANFANG RIBAO, 23 Jan 80)........................... 42

CONTENTS (Continued)

Shunte County Distributes 220 Yuan Per Capita
(NANFANG RIBAO, 21 Jan 80)............................ 45

Letter Urges Steps To Overcome Rotten Seedlings
(NANFANG RIBAO, 12 Jan 80)............................ 47

Foshan Prefecture Carries Out Field Preparations
(Wu Jiongwei; NANFANG RIBAO, 12 Jan 80)............... 49

Briefs
Guangdong Sugar Output 51

Jiangsu

New Features in Development of Agricultural Regions Outlined
(She Zhixiang; DILI XUEBAO, Jun 79)................... 52

Jiangxi

Jiangxi Popularizes Very Early Rice Variety
(Fu Hong Ming, et al.; GUANGMING RIBAO, 5 Feb 80).... 77

Shandong

Use of New Cotton Variety Extended
(Fan Youde, Wang Zhaojie; GUANGMING RIBAO, 5 Feb 80). 79

Sichuan

Production Team Leaders Democratically Elected
(Zhang Xiaoli; NONGCUN GONGZUO TONGXUN, 5 Dec 79).... 80

Yunnan

County Expands Use of Scientific Farming
(GUANGMING RIBAO, 5 Feb 80)........................... 84

Zhejiang

Grain Production Boosted by Scientific Farming
(Lu Liang; GUANGMING RIBAO, 14 Mar 80)............... 86

CONTENTS (Continued)

Qiantangjiang Area Develops Mechanized Farming
(Feng Xiang; NONGCUN KEXUE SHIYAN, No 3, 1979)..... 89

II. PUBLICATIONS

Table of Contents of 'NONGCUN KEXUE SHIYAN' No 9, 1979
(NONGCUN KEXUE SHIYAN, No 9, 1979)................. 94

Table of Contents of 'KUNCHONG ZHISHI', Nov 79
(KUNCHONG ZHISHI, 21 Nov 79)....................... 97

Table of Contents of 'KUNCHONG ZHISHI' Jan 80
(KUNCHONG ZHISHI, 21 Jan 80)....................... 100

Table of Contents of 'QIXIANG' No 5, May 1979
(QIXIANG, May 79).................................. 103

Table of Contents of 'QIXIANG' No 6, Jun 1979
(QIXIANG, Jun 79).................................. 105

Table of Contents of 'QIXIANG' No 7, Jul 1979
(QIXIANG, Jul 79).................................. 107

I. GENERAL INFORMATION

CHANGES IN FARM ECONOMY PROPOSED

Beijing GUANGMING RIBAO in Chinese 17 Jan 80 p 2

[Article by Yu Guoyao [0151 0948 5069] of the Political Study Office of the Ministry of Agriculture, "Use Economic Measures to Readjust Irrational Economic Structure in Agriculture"]

[Text] Readjustment of the irrational economic structure of agriculture to make our country's agriculture gradually become one that has a rational overall makeup with development in every aspect, so that it is able to satisfy the people's livelihood and the needs of industrial development, and to make our country's rural villages gradually become rich and populous with a comprehensive administration of agriculture, industry, and commerce, is an important problem in the implementation of the eight point policy. Studying how to apply economic means to the readjustment of the economic structure throughout agriculture is very important in the realization of this goal.

On Use of Economic Means To Solve the Grain Problem

The economic structure of our nation's agriculture is irrational, in that it tends to concentrate on grain production alone while slighting or exerting pressure on forestry, livestock raising, fisheries, and cash crops. This is partly a problem in perception and partly a problem that results from a real shortage of grain. Because growth of agricultural production in our country has been slow during the past 20 years, not only must grain now be imported, but also cotton (imported to support exports), edible oil, and sugar have to be imported. How to handle the importation of grain, cotton, edible oil, and sugar and how to use economic measures to accelerate the pace of readjustment of the economic structure in agriculture are problems that very much merit study. Let us work up two separate formulations to explain this problem.

The first formulation involves whether to arrange for importation of grain so as to be able to accelerate readjustment of the economic structure of agriculture, or whether to import less grain and delay the pace of readjustment. Take the cases of the Nantong and Yancheng cotton-producing regions of Jiangsu Province. Were the state to solve their grain problem by giving them 1 billion jin so that they could devote their energies to the development of cotton, by 1985 they would be able to increase cotton production to 4 million dan, and henceforth it would be possible to reduce cotton imports. Four million dan of cotton, calculated at current international market prices, could be converted into 6 billion jin of grain, and so the problem of grain for consumption throughout the cotton-growing regions of this country could be virtually solved. Once the food problem in the cotton-growing regions of the entire country had been solved, no further cotton would have to be imported. If only the pressure to grow grain were relieved in areas that produce edible oils and sugar, by adapting measures to local situations and making the fullest use of natural advantages, more edible oils and sugar could be produced.

In the second formulation, were the state to increase imports of chemical fertilizers for the grain-producing areas in order to hasten the development of commodity grains within the country, it would be able to take commodity grain from the grain-growing areas and use this commodity grain as the grain required to readjust the economic structure of agriculture and move the readjustment work forward. Were the state to import an additional 2 million tons of urea each year specifically for use in areas producing commodity grain, on the basis of 1 jin or urea bringing about an increase of 3 jin of grain, an increased annual harvest of commodity grain amounting to between 6 and 7 billion jin would result. If another million tons of phosphate fertilizer were to be imported, increases of between 8 and 9 billion jin of commodity grain could be harvested (with a 60:40 or 50:50 division with the grain-producing regions). Were the state to apply this commodity grain to the readjustment of the structure of agriculture, probably within 3 to 5 years the currently very irrational makeup of farm crops could be readjusted.

Experience has shown that unless the grain problem is solved, and unless state requisition grain purchase quotas are less, commune members will not have much grain for consumption. It is difficult to imagine farmers with less than full bellies having much enthusiasm for developing the forestry and livestock industries or for growing cash crops. Unless something is done, it will not be easy to get any places to stop concentrating on grain, and the notion that "grain is agriculture" will be impossible to change.

9432
CSO: 4007

FINANCIAL MATTERS OF PEOPLE'S COMMUNES DISCUSSED

Food Grain Pricing

Beijing NONGCUN GONGZUO TONGXUN [RURAL WORK NEWSLETTER] in Chinese No 3, 5 Dec 79 p 6

[Article: "Answers to Questions: When People's Communes in the Countryside Distribute Food Grain, How Should They Calculate the Price?"]

[Text] Question: After the price for the state's uniform purchase of grain is raised, according to what price should the grain a people's commune distributes to its members be calculated if we are to establish a good practice?

Answer: It is better not to raise the price of collectively distributed food grain for the time being. The reasons are:

If the price of distributed food grain is raised, the actual income of the collective would in reality not be increased. The result would only make the collective, on the one hand, raise the total of its income in the calculation, take away the public cumulation fund and the common welfare fund, and then distribute it to the members in larger shares so as to appear to be increasing their income; but, on the other hand, it must also collect food grain from the members at the higher price and thereby increase their burdens too. Taken as a whole, the increase in income and the increase in burden for the members would thus be just about comparable. But, since situations with households of the members do vary, the raise of food price may result also in different degrees of advantage or disadvantage for them. According to investigation: the current situation concerning how the increase in income and the increase in burden of each household offset each other is that, generally speaking, for about 50 percent of the households the offsetting amounts are just about even; for about 20 percent of the households whose labor power is relatively strong, there would be a net increase in income; for about 20 percent of the households whose labor power is relatively weak, there would be a net increase in burden; and for about 10 percent of the families of certain employees and workers, military personnel, cadres and teachers, there would be a slightly larger increase in burden because their principal labor power happens to be engaged outside of the communes.

If food grain price is raised, therefore, this would result in an increase in burden for the families of such employees and workers and such households of weak labor power, which would offset the increase in income they obtain from the higher price for their agricultural products; it might even increase their already excessive expenditure and their existing debt. Such would not be in the interest of reinforcing our situation of stability and unity.

If the price of distributed food grain is not raised, the income of the households of all members would increase, because the price for the grain they have for sale is already raised. The only difference is that, in the case of households of strong labor power, the increase in their income would be slightly less than the raise in food grain price; but there is still an increase in their income. These households are bound to have some opinion to express, but such opinion would not be very strong; basically, the situation is one in which all find some satisfaction.

Question: The uniform purchase price is fixed by the state; is it all right for food grain price not to be raised alongside?

Answer: Food grain is a basic necessity for our livelihood in the internal distribution of a collective economy; its price need not change along with the price fixed by the state. If the state's fixed price is to be followed, then the price for the state's food grain sales is not raised either, so that the price of collectively distributed food grain should also not be raised.

Question: Does this abstention from a raise of food grain price accord with the principle "to each according to his work?"

Answer: A raise of food grain price is advantageous to households of strong labor power; absence of such a raise is advantageous to households of weak labor power. To raise or not to raise is thus a question of adjusting interests between commune members themselves, and not a question of carrying out the principle "to each according to his work" or not. The reason for the state to raise the price for its uniform purchase of grain is not because the principle "to each according to his work" is not thoroughly carried out either, but because the interests between the collectives and the state have not been properly adjusted.

Question: In order to raise the value of work points and raise commune members' enthusiasm in labor, the price of food grain should also be raised. Is this a comprehensive enough view?

Answer: As has already been analyzed, a raise in food grain price is bound to raise the value of work points on the one hand and to increase the burden by such price on the other, so that, for part of the households the gain and the loss are comparable, for anotherpart, the loss is greater than the gain, whereas for still another part, the gain is greater than the loss. This by no means helps achieve the goal of mobilizing the enthusiasm of the entire membership in labor.

Question: Would it be all right for a basic accounting unit to calculate the price of its own distributed food grain?

Answer: If the price of distributed food grain is calculated by a basic accounting unit itself, because interests of the households with strong labor power are not consistent with interests of those with weak labor power, people would not contend very much only in those very few units where increase in income happens to be very great; in the case of the average accounting units, this could lead to effects disadvantageous to unity among the members. When results of such a practice will thus be quite uneven, and when no uniform standard for calculating income will thus be followed, there would be many difficulties for us to compile statistics, to audit, and to compare the diverse practices of this sort on the part of the accounting units.

Question: In some places, decisions have already been made either to calculate food grain price according to the raised uniform purchase price or to let the basic accounting units fix their own new price: are these decisions to be changed back again?

Answer: Our country is very big, and local situations are complex. If in places where situations are exceptional there is need for a raise in price or for the basic accounting units to make their own decisions, leading organs of the provinces, municipalities and autonomous districts involved may make a determination on their own according to concrete conditions.

(People's Communes Bureau,
Ministry of Agriculture)

Rewards for Quota Over-fulfillment

Beijing NONGCUN GONGZUO TONGXUN [RURAL WORK NEWSLETTER] in Chinese No 3, 5 Dec 79 p 7

[Article: "How To Draw Reward for Over-fulfillment of Production Quota?"--Discussion by Wang Yutong of the Agriculture, Forestry, and Water Conservancy Office, Zhongmou County, Henan Province]

> [Text] Editorial Note: Reward for over-fulfillment of production quota by work teams should best be made in additional work points. The author here points out the defect of rewarding actual products without at the same time excluding their production costs. It is hoped that our people will study this question and come up with some improvement when we fix our output quota next year.

In order to seriously carry out the two documents on agriculture from the central authorities, not a few production teams have put into effect a production responsibility system relating to amount of production. This practice connects the amount of production closely to the reward for the commune member's labor; it thus actually realizes the principle of more reward for more work and mobilizes the enthusiasm of the vast ranks of the commune members.

However, the question as to how to draw the reward for the part beyond the quota fulfilled under this production responsibility system relating to amount of production merits our study here. At our place here, any actual amount of production which is higher than the fixed quota of production is considered an over-fulfillment of the production quota. The part that exceeds the quota is thus given a reward according to a percentage. In the case of most production teams, 40 or 50 percent of this extra part would be drawn and given the overfulfilling producers to keep. For example, if the fixed quota of output is 1,000 catties, and the actual production is 1,200 catties; 100 catties would be drawn as a reward to the reward-winning producer which would be neither given him according to a fixed price nor counted against his quota of food grain to be ordinarily distributed to him. I think this practice is unreasonable, because it damages the collective interest. The production responsibility system is responsible only for management in the fields. As for the amount of investment, ploughing and sowing, these are handled within the team jurisdiction in a uniform way; expenses for seeds, medicine, fertilizers, water and power, purchase of small farming tools and maintenance and repair of large machines are likewise covered by the team management as a whole. The amount of grain production is very significantly related to the amount of investment by the team. Management in the fields is a production-increasing factor, but not the decisive key. Under normal conditions at our place here, expenditure for production cost usually takes about 40 percent of the team's total income. Without such expenditure, production increase can in no way be guanranteed. This is to say, over-fulfilled parts of the production embody also the team's investment. If we indiscriminately order that 50 percent of the over-fulfilled parts be given to the managers in the fields, would this not be the same as giving even part of the investment away? This necessarily expands our investment and increases the cost for our grain production. In the carrying out of this responsibility system relating to amount of production by some teams, recipients of reward for their over-fulfilled parts of production would draw amounts of grain proportionately without their economic value being taken into consideration, and they at the same time also receive more work points. If these work points are in turn counted among those for the distribution of the overall income, they are bound to reduce the per point work-day value for the entire team; since the things produced by these work points have already been drawn by the managers without a price being fixed for them, they should not again share results of labor of the entire team membership. Some say, if we reward over-fulfilled parts of production this way, at least a half of the overall production would still be left to the team, the collective will not suffer shortage, nor will other commune members be put at a disadvantage. Exactly, this way the collective will have some increase in its income, and other commune members may also share a little bit more. But if this were done, 60 to 70 percent of the over-fulfilled parts of production would have been drawn away by the reward recipients, with only 30 to 40 percent left to the collective. Because the production cost is not taken out from the rewarded parts, this is the same as giving part of the collective investment also to the managers. The collective economy is bound to be weakened as a result.

As I see it, rewarding the production over-fulfillers with additional work points would be the best. If they are rewarded with grain, then production cost for the parts drawn should also be taken out. In the case of certain teams where the over-fulfilled parts of production to be drawn are given in an equivalent of cash, such production cost should likewise be withheld. This is to say, it is more reasonable to give rewards from net income, and reference can be taken of the practice in industry in this regard by which rewards are drawn from net profits.

Debts to Communes, Brigades

Beijing NONGCUN GONGZUO TONGXUN [RURAL WORK NEWSLETTER] in Chinese No 3, 5 Dec 79 p 10

[Article: "We Must Solve Well the Question of State Enterprise and Business Units Owing the Countryside's Communes and Production Teams Payments"--Suggestion by the Agricultural Commission of Shanxi Province]

[Text] In order to seriously fulfill the spirit of the Third Plenary Session of the 11th Party Central Committee and the Second Session of the National People's Congress, and realize the Party's economic policy in the countryside, the Agricultural Commission of Shanxi Province recently conducted some investigation and study of the question of state enterprise and business units owing the countryside's communes and production teams payments. According to incomplete statistics, by the end of 1978, cumulated payments owed by state enterprise and business units in the province to the countryside's communes and production teams beyond the past fiscal year amounted to 120 million yuan. Among these outstanding payments were those for the sale of industrial and agricultural by-products, those for construction materials, processing fees, transportation fees, fees for expropriation of land service charges. According to a report by the Yangquan Municipality, the Laohugou Brigade in its Yinying Commune produces fire-proof materials which are sold as far as Jilin and Hebei provinces and as near as Dingxiang and Yingxian counties within the province. Altogether, 17 units within and without the province now owe the brigade payments amounting to 553,200 yuan, averaging 461 yuan to each brigade member and equivalent to 2.3 times the distributed income of each member last year. In Lingfeng Municipality, state enterprise and business units owe the countryside's communes and production teams a total of 1.17 million yuan, of which payments for expropriated land amount to 508,000 yuan, or 43.1 percent of the total. In Taiyuan Municipality, state enterprise and business units owe the countryside's communes and production teams payments amounting to 16.34 million yuan, of which transportation fees amount to 3.46 million yuan, or 21.2 percent of the total. The Xigaozhuang Brigade of Baiban Commune in the municipality's northern outskirts sold 100 tons of limestones it produced and transported all by itself to No 2 Electric

Power Plant at a total price of 76 million yuan. This year, the brigade has planned to use this payment to buy a thrashing machine; but, since its capital could not be collected into its year-end account, the machine was not bought. This caused the newly harvested wheat to be exposed to rain, thus causing a more than 20 percent damage. Apart from these cases, a few state-managed units, failing to handle their own businesses well, also borrowed funds from the countryside's communes and production teams without repaying them in time. The Oxygen Plant in Yuzhi Municipality borrowed 5,000 yuan from Guojiabao Brigade to pay wages to its employees and workers; the municipal seedling nursery also borrowed 29,000 yuan from the three brigades of Dadongguan, Xiaodongguan, and Zhongho to build some houses; the municipal broadcasting service department borrowed 30,000 yuan from Nanguan Brigade in 1976 to buy broadcasting accessories" all these borrowed amounts have never been entirely paid back in the years since then.

According to investigation, the reason for the emergence of this question has been many-sided, but mainly because, under the interference of the extreme Left line of the Lin Biao and the "gang of four," some local party and government leading comrades failed to establish the idea of taking agriculture as the foundation; their understanding of the importance of protecting the collective economy of the people's communes proved deficient; they decided at random to establish certain new factories and mining operations, thereby taking over land and materials from the communes and production teams by force, and encroaching upon the interests of the peasants. In handling capital construction, leading comrades of certain enterprise and business units often started to buy construction materials and appropriate human and animal labor from the communes and production teams even before it was incorporated into the state plan; the result was that such capital construction became a passive undertaking, with invested resources owed to the communes and production teams for long periods, and with the burden therefore transmitted to the peasants too. Some enterprise and business units failed to manage well and hence suffered serious losses; this also made it impossible for them to pay back the outstanding debts for long periods. Also, because of interference and sabotage by the "gang of four" in recent years, financial management in certain enterprise and business units as well as certain communes and production teams in the countryside became similarly confused, and both sides failed to clear up such debts as a result. In some cases, the two sides were in a cooperative relationship; afraid that this relationship would be affected and their production outlet thus stemmed, the communes and production team did not even dare to clear up their accounts. Some enterprise and business units, on the other hand, would precisely take advantage of such little good they might be able to render to the communes and production teams and simply drag along without paying their debts. There have also been cases where products processed by the communes and production teams falling short of requirements or some other reasons had led to economic disputes which in turn caused debts to remain unpaid for long periods.

We must recognize that to seriously solve the question of state enterprise and business units owing the countryside's communes and production teams payments is an important item of work in thoroughly implementing the Central

Committee's proposed policy of readjusting, restructuring, consolidating and improving agriculture, and also an important aspect in thoroughly implementing and carrying out the directive of the party Central Committee and the State Council concerning the solution to the people's communes' excessive spending and indebtedness question. On the basis of experiences in various regions, we should see to it that the following problems are well solved:

First, party committees and state enterprise and business units at the various levels must further firmly establish the idea of taking agriculture as the foundation, strengthen investigation and study, clear away all outstanding debts, actively adopt measures in respect to various conditions, and thereby seek to pay up these debts by the end of this year.

Second, party committees at various levels must themselves convene meetings of responsible persons of payments-owing units to point out the meaning, make the demands, set the time limit, and thereby mobilize them to pay up their debts. They must also assign special personnel to go after and inspect the units, so that enterprise and business units doing a good job of paying up their debts can be praised in time, and those lagging behind in their action and showing no enthusiasm in paying up their debts can be subjected to criticism and education.

Third, the countryside's communes and production teams must actively ask the debtor units to pay up the funds they owe. In the case of the few units whose accounts happen to be vague, efforts must be made to find out the reason as soon as possible so as to have them cleared. Since last year, Changzhi Municipality's many communes and production teams have resorted to the practice of issuing notices on outstanding debts and sending special emissaries to the debtor units to ask for payments and clear their accounts; the results achieved have been relatively good. Other places may imitate this practice.

Fourth, in the case of units whose production is suspended or transferred elsewhere, the departments in charge must take the responsibility, adopt measures, and find ways to pay up the debts. In case they cannot be paid up for the time being, a plan for paying them up must be set up so that payment can be made in installments.

Fifth, in order that similar situations do not recur from now on, state enterprise and business units as well as the countryside's communes and production teams must seriously rectify their financial practices, tighten their economic procedures, gradually effect production and sales by contract, and insist on doing things according to regulations so as to clear away this year's financial procedures this year.

Over-distribution in Production Teams

Beijing NONGCUN GONGZUO TONGXUN [RURAL WORK NEWSLETTER] in Chinese No 3, 5 Dec 79

[Article: "The Lesson of Over-distribution in Four Production Teams of Wangcheng County Merits Reckoning"--Report by Peasant-managed Investigation Group, Revolutionary Committee, Changsha Municipality]

[Text] When Riming Brigade, Baima Commune, in Wangcheng County, Hunan Province balanced its account in 1978, it was discovered that there had been four production teams in the brigade which "consumed in the 3rd period the grain for the 4th period" and hence caused an over-distribution of 6,837 yuan, with an average over-distribution of 15 yuan to each member. Production team No 6, the one with the greatest over-distribution, produced the record of an average over-distribution of 19.3 yuan, out of a share of 106 yuan (43 yuan above that of last year), to each members.

Why did over-distribution result? Mainly, there are the following four reasons:

One is that financial accounts were confused and piled up; their basic figures became obscured; and hence there resulted a distribution of things non-existent. In production teams No 6 and No 9, some April accounts were not recorded even by the end of November; when distribution time came, the people responsible were forced to estimate their amounts of income and expenditure in a hurry. Production team No 6 estimated that its income was 20,258 yuan, which turned out to be only 19,108 yuan, thus creating a non-existing account of 1,150 yuan extra. Production team No 9 estimated that its expenditure was 7,856 yuan, which turned out to be 9,253 yuan. These two teams together distributed 2,794 yuan which should have been left intact as part of the public cumulation fund; this resulted in an average over-distribution of 19.3 yuan and 8 yuan to each member respectively.

The second is that the situation with cadres has not been stable; there have been too many changes; and those in position at the time would only care about "being red-hot this year" and ignore the long-range interest of the collective. In 1976 production team No 5 balanced its account in such a way as to relegate its production cost expenditure to the following year, with a resultant over-distribution of more than 1,000 yuan. In 1977 it followed the same method by relegating 2,400 yuan to the following year; when 1978 came, the team leader and the accountant noticed that the expenditure for the year was considerable, the value of each work-day was only 0.4 yuan; under such circumstances distribution to each team member would be less than 60 yuan, or 6 yuan less than the preceding year. In an attempt to win honor, they raised the value of each work-day to 0.5 yuan; this turned per member distribution into 70 yuan, or 7 yuan more than the preceding year. In this way, they exhausted all the 2,016 yuan originally reported by the brigade as collective cumulation fund and production fund set aside.

The third is that the cadres of a small number of production teams were bent on exerting their finesse on trivial calculations, thus when they carried out distribution they remembered only individuals and not the collective. Production team No 7 accountant Gong Zanqing was an old accountant of the cooperativization period and very familiar with the business. He calculated that the work points of his entire family were more than the preceding year, the level of food grain was higher, and the distribution of actual products was to be more. In order to enable themselves to receive a greater share of cash, he adopted the method of not counting family fertilizers as production cost expenditure; this led to an over-distribution by the team of 2,043 yuan of non-existent funds. According to this method, 0.12 yuan more was distributed to every 10 work points; Gong Zanqing's family therefore was distributed altogether 136.15 yuan more. This not only squeezed off the public cumulation fund that should have been set aside in the year, but even used up 198 yuan from the cumulation of earlier years.

The fourth is that emphasis has been one-sidedly placed on the income increase of commune members; the communes blindly demanded that the average distribution of income to each member must be more than 90 yuan, and when they appraised and compared with each other, they also paid attention only to each member's income from average distribution and ignored the proportion of cumulation fund set aside. This led to the practice of distributing more and setting aside less at the basic level.

The havoc played by over-distribution at the time an account was balanced has been extremely great. One result is that the policy of "to each according to his work" cannot be carried out, and this harms the enthusiasm of the masses of the commune members. Because of over-distribution in production team No 7, the share of 183 yuan due four households there could not be realized. The opinions of the households with cash due them were very strong; there was nothing the team cadres could do except put 2,000 catties of rice on sale at a negotiated price. Only thus did the team even off the average distribution to each household. In the case of production team No 9, the sum of 750 yuan in shares due its member households was not realized even by July this year. Another result is that collective cumulation has become exhausted, and this is creating difficulties for this year's production. According to statistics provided by four production teams, they have borrowed since the beginning of this year state loans and cash form external units a total of 4,762 yuan, which makes each mu of early rice production indebted to the extent of 12.8 yuan right away. In the instance of production team No 9, though it borrowed 1,912 yuan of state loans, by the time the early rice faced sickness and insect trouble, there was still no money to buy medicine to fence against them. The team was forced to borrow 700 yuan from the team members at a high interest rate, paying 100 catties of indicator rice for every 100 yuan borrowed. Because its cumulation fund was distributed, there was only a single yuan left in the treasury of production team No 7 by the end of June; when sickness and insect trouble broke out, it was forced to borrow money to buy medicine. As a result, prevention and curing of such sickness and insect trouble were not done in time, and a certain degree of damage to the early rice resulted. After production team No 5 finished balancing its account and its distributing work, there was not even 1 cent left. Apart from asking for a loan from the state this year, it has sold out all of the team's grain (including the portion set aside in storage), and it still needs to borrow several hundred yuan from the team members and other teams at a high interest rate.

The third result is that distribution of non-existent funds last year brings a bad impact on this year's distribution. Apart from having distributed away more than 500 yuan of the cumulation of past year, production team No 6 estimated a non-existent income of 1,150 yuan, with an average of 12.7 yuan distributed to each member; this would have to be taken out from this year's income. Team cadres have reported: "Even if our income should increase this year, it would still be difficult to make up last year's non-existent estimate; it is possible that the average distribution of income to members this year will be reduced."

Looking at the over-distribution situation in the four production teams of Riming Brigade, what ought to attract our attention is this: leading cadres at the various levels should further strengthen their leadership in financial work; financial and accounting personnel providing assistance in districts and communes should regularly inspect production team financial accounts and supervise the financial personnel there so that they would seriously, accurately and timely appraise members' work points, record their accounts, and thereby really keep them clear for every 10-day or monthly period as well as prevent the work points appraisals and accounts from becoming confused and piled up. At the same time, they should strengthen their political and ideological work toward cadres at the basic level and regularly carry out the socialist education on love for the state and love for the collective. At the time distribution is balanced in the account, accurate income and expenditure must be verified in financial work; relationship between cumulation and consumption must be correctly treated; cumulation funds must be reasonably set aside so as to guarantee the steady rise of the standard of living for the commune members as well as the development of agricultural production at a high speed.

9255
CSO: 4007

RESEARCH ON NATURAL ENERGY RESOURCES FOR FARM USE PROPOSED

Beijing GUANGMING RIBAO in Chinese 14 Mar 80 p 2

[Article by Jian Ying [0404 3841]; "One Way To Solve Our Country's Agricultural Energy Problems. Units in Electrical Engineering Institute Propose Launching of 'Natural Energy Resources Community' Research"]

[Text] Is it necessary in the realization of the four modernizations and the total development of agriculture, forestry, livestock raising, sideline occupations and the fishing industry to depend on conventional energy sources? In some proposals jointly posed at the first Energy Work Conference convened not long ago by several research units of the Chinese Academy of Sciences, it was pointed out that for the broad areas outside the cities where our country's more than 800 million population lives, conventional energy resources are usually lacking, and communications and transportation are difficult. For every place to depend on conventional energy sources for everything is unrealistic. The broad masses of rural villages will have to consider fitting measures to the local situation and utilize in a comprehensive way various common natural energies such as methane gas, solar energy, wind energy, small hydro-power generators, geothermal energy etc., converting them into heat energy or electric power, using materials available locally to supply the local area, thereby solving the problems of fuel and small-scale motive power used for processing in the broad masses of rural villages. For this purpose they proposed launching of research by a "Natural Energy Resources Community" to realize this goal.

This proposal was first raised by the Electrical Engineering Institute. The so-called "Natural Energy Resources Community" would include chiefly solar energy, bioenergy, wind energy, and water power energy. It would use energy back-up for regeneration of energy so that no matter whether meterological conditions were bright weather, rain, or wind, full use could be made of them by offsetting weaknesses with strengths, and taking from one to help the other. Rational use of excess heat in tandem with methane gas, which living organisms can produce, could be harnessed in a combined power generating system. With only a power rating of a few score kilowatts, a production team's energy requirements could be met. It could be used not only for the processing of agricultural sideline products, pumping water for irrigation, repair of farm machinery, and the development of joint agricultural and industrial enterprises by communes and brigades, but it could also solve the problem of fuel in rural villages, in providing illumination, and as a source of electricity for radios and television sets, in furnishing hot water, and creating the conditions for uplifting the material, cultural and living standards of the broad masses of peasants. Launching of this research will have important significance for the exploration of the road leading to the development of our country's agricultural energy resources and the gradual formation of "agricultural energy resources engineering studies."

Specific methods raised in the proposal were as follows: Organize pertinent units within the Chinese Academy of Sciences to do solid basic research and experimental work in laboratories, test manufacturing some new structural components. In addition, to select, following investigation and research, a multi-purpose experimental site for rapid development of the study of total systems work to produce typical demonstrator systems, which could be popularized after testing out.

This proposal from the Electrical Engineering Institute immediately gained a response from the Chengdu Institute of Biology and support from the National Resources Comprehensive Survey Committee of the Chinese Academy of Sciences, which felt that it was one way to solve our country's agricultural energy problems. During the conference, a small discussion group was formed under the auspices of the Electrical Engineering Institute of the Chinese Academy of Sciences and with the support of pertinent officers in charge in three bureaus of the Academy, consisting of the Chengdu Branch of the Chinese Academy of Sciences, the Chengdu Biological Institute, the Chengdu Institute of Science and Technology, and the National Resources Comprehensive Survey Committee.

They discussed the launching of this research and how to go about it.

9432
CSO: 4007

SYNTHETIC AMMONIA PLANTS MAKING INNOVATIONS

Beijing NONGCUN KEXUE SHIYAN [RURAL SCIENTIFIC EXPERIMENTS] in Chinese No 9, 1979 p 2

[Text] At present, many of our nation's medium and small synthetic ammonia plants use the method of washing with water to remove carbon dioxide from raw materials for synthetic ammonia. This wastes water and electricity and the loss of hydrogen and nitrogen is great. Allyl carbonic acid ester is a kind of organic solvent that is very stable and easily synthesized. It is highly efficient in absorbing acid gases and organic sulphides. In 1977, the Research Institute of the Nanjing Chemical Industry Company completed a miniature experiment in removing carbon dioxide by allyl carbonic acid ester. A mathematical model of absorption dynamics was obtained from the miniature experiment and enlarged 1000 to 1500 times. In 1978, the process was tested at synthetic ammonia production facilities in Shandong and Zhejiang. Results of the tests show the capacity of allyl carbonic acid ester to absorb carbon dioxide is 4 times that of water. Consumption of electricity for each ton of ammonia was less by 2/3, the loss of hydrogen and nitrogen was reduced by one half, the rate of absorption and purity of carbon dioxide were raised, and the mathematical model could be used in the design of production equipment. This achievement has a very important economic significance in reforming the techniques of medium and small synthetic ammonia plants. In addition, this is a first in the experimental use of a mathematical model and directly enlarging it for industrial production in our nation. It is also a topic of study in chemical engineering in foreign nations during the 1970's.

Spherical Synthetic Ammonia Catalyzer

Synthetic ammonia catalyzers are generally irregular and do not have a definite shape. When placed inside the synthesis tower, these kinds of catalyzers possess a high resistance. The air flow is not distributed evenly. The axial and radial temperature difference of the column plate is great. This seriously affects large scale increase in the yield of synthetic ammonia. In the past year, the United States and France have experimented with spherical or cylindrical catalyzers and there have been special reports on such attempts but the technology is kept secret.

The Department of Chemistry of Chengzhou University with help from concerned units and after repeated experiments, finally successfully developed a kind of spherical catalyzer. It has been tested at several synthetic ammonia plants with good results. For example, the Xing Yang Chemical Fertilizer Plant originally used a catalyzer of indefinite shape and the highest monthly production of synthetic ammonia was 505 tons. After changing to the spherical catalyzer, a new record of 580 tons of ammonia was created. The method for manufacturing the spherical catalyzer developed by them is technologically simple and is easy for industrial production. This achievement enables synthetic ammonia plants to increase production on a large scale without increasing facilities and investment.

9296
CSO: 4007

MEASURES TO PRODUCE PER MU YIELD OF ONE THOUSAND JIN OF WHEAT

Beijing NONGCUN KEXUE SHIYAN [RURAL SCIENTIFIC EXPERIMENTS] in Chinese No 9, 1979 p 1

[Article: "Techniques of Cultivating a Thousand Jin of Per Mu Yield of Wheat in the South"]

[Text] The lower reaches of the Changjiang are warm and have plenty of rain. High and stable yields of wheat are seriously affected by damage due to dampness, cereal scab and high temperatures and suppressive heat. The Crop Institute of the Jiangsu Provincial Agricultural Science Academy summarized the experience of the masses and conducted physiological studies of high yielding wheat, and based on these studies, 5 high yield wheat experimental fields were planted last year, totaling 8.88 mu with an average per mu yield of 1086.3 jin (The No 1 field of 1.38 mu was planted with "Ning 7318" variety and produced an average per mu yield of 1137.9 jin. The No 2 field of 1.40 mu was planted with "Ningmai No 3" variety and produced an average per mu of 1101.2 jin), and creating a new record high yield of wheat in the lower reaches of the Changjiang. They summarized the measures of cultivation that produced an average per mu yield of one thousand jin from this experience. They are:

1. Reasonably Dense Planting and Appropriate Sowing Method

Appropriately reducing the number of seedlings to increase the formation of spikes from tillers and to increase fruiting by spikelets are means to coordinate the conflict between many spikes and large spikes and thus to achieve high yields and resistance to lodging. The several plots of high yielding experimental fields had between 120,000 and 140,000 basic seedlings per mu sown in large and small rows by machine. The large rows were 8 cun and the small rows were 4 cun apart.

2. Apply Sufficient Base Manure, Apply More Fertilizer for the Seedlings, Cultivate Strong Seedlings

Base manure should be mainly organic fertilizers. To each mu should be applied 8000 jin of pig manure and weed compost, between 80 and 100 jin of calcium superphosphate, and 40 jin of potassium chloride. Another 100 jin of rapeseed cakes as middle layer fertilizers were applied to stimulate growth of strong seedlings.

3. Observe the Seedlings and Make Judgment and Manage Scientifically

To counter high temperatures in winter and spring and the trend to profuse growth of the wheat seedlings, the field was packed five times and intertilled deeply before and during winter and in early spring. In fields that were intertilled deeply twice, the highest number of tillers on the stem was less than that of the contrast by over 10 percent. The number of roots of the single plant increased onefold. The plants shortened, the internodes shortened, and the ability to resist lodging was increased.

4. Pay Attention to the Prevention of Diseases and Insect Pests

After wheat flowered, "carbendaxol" was sprayed twice to prevent cereal scab, and at the same time additional "dimethoate" and "trichlorfon" were sprayed to prevent aphids and armyworms.

9296
CSO: 4007

BRIEFS

ELECTRONIC MONITOR FOR SOWING--To raise operational efficiency of the seeder and to discover omissions in sowing, broken rows and blocking, the Heilongjiang Provincial Agricultural Machinery Research Institute successfully developed the BJY-1 model sowing monitor. The seeder, installed with this monitor, can detect malfunctioning of any group of column seeding mouths which did not sow. The column seeding mouth's seeding signal will send a signal to a malfunction indicator via an infra. photoelectric sensor. At this time, a pulse vibratory alarm sounds and the indicator light lights up and the operator is also given the number of the column seeding mouth which is malfunctioning so that the malfunction can be immediately corrected. The BJY-1 model seeding monitor has the following characteristics: (1) It is entirely transistorized, its structure is compact, it is small. Its circuits are simple. It is convenient to manufacture, maintain and use. (2) It consumes little electricity. Five No 1 batteries are sufficient for an entire sowing period. (3) The sensor is a rather advanced infrared photoelectric device. It is small. It uses little electricity. It lasts long (over 5,000 hours). It is shockproof and dustproof. (4) By changing the dimensions of the outer case or the structured dimensions of the sensor and the position of installation, it can be adapted to different types of seeders or seeders with different number of rows. [Text] [Beijing NONGCUN KEXUE SHIYAN [RURAL SCIENTIFIC EXPERIMENTS] in Chinese No 9, 1979 p 2] 9296

GENERAL PURPOSE VEGETABLE SEEDER--The Beijing City Agricultural Machinery Research Institute cooperated with the Haiding Regional Yutan Commune Agricultural Machinery Station and successfully developed the 2BS-17 model general purpose vegetable seeder. It is drawn by an East Is Red -28 or tractor-55 to sow spinach, radish, Chinese cabbage and rape. It can complete six operational procedures of flattening a plot, digging channels for irrigation, furrowing, seeding, covering the ground with soil, and packing the soil. It is suitable for cultivating ridged plots in the Beijing area. It can save labor and lessen labor intensity. This type of seeder has a compact structure. It is versatile in operation and occupies a small space. It uses a nested eyewheel and ratchet gear combination type column seeder adjusted by a guide screw. It is equipped with four seeding speeds: the flattening and irrigation channel digging mechanism and adjustment of depth in furrowing are easily operated and reliable. The seed container has a volume of 81 liters and a sowing spread of 1,700 millimeters and a sowing depth of from 10 to 70 millimeters in 17 rows. The entire machine weighs 391 jin, and its operational efficiency is 9.5 mu per hour. [Text] [Beijing NONGCUN KEXUE SHIYAN [RURAL SCIENTIFIC EXPERIMENTS] in Chinese No 9, 1979 p 2] 9296

005 SOYBEAN NODULE BACTERIAL STRAIN--Symbiosis of nodule bacteria fixes nitrogen. This not only can enrich the field and nourish the land, more importantly it can increase the content of superior protein in leguminous crops and increase yield. Utilizing nodule bacteria to inoculate leguminous crops is an economical and effective measure. The Pedology and Fertilizer Institute of the Chinese Agricultural Science Academy gathered nodule bacteria in the Heze mountainous region in Shandong Province, and separated the highly effective 005 bacterial strain of soybean nodule bacteria. It has been determined that the 005 bacterial strain is a new kind of serum type soybean nodule bacterial strain. Its infectious strength is 3 times higher than the 2028 bacterial strain (separated from an American commercial bactericide in 1974), and the activity of its nitrogen fixing enzyme is 2.5 times higher. Its affinity to the major summer soybean varieties of the Yellow River and Huai River valleys and the regions of southern China and its ability to resist dryness and drought are also stronger than those of the 2028 bacterial strain. In the past 2 years, experiments were conducted in large fields in Tengxian of Shandong Province, Heze region and Xuzhou region in Jiangsu Province. The experimental fields totaled over 15,000 mu. The results show plants inoculated by the 005 bacterial strain produced an increase of 6.7 to 8.7 percent in yield over plants inoculated by the 2028 bacterial strain. This amounted to an increase of from 18.1 jin to 31 jin of soybean per mu. Compared to the yield of plants not inoculated, this was an increase of between 10 and 12.9 percent and a per mu increase of between 29 and 45.3 jin of soybeans. [Text] [Beijing NONGCUN KEXUE SHIYAN [RURAL SCIENTIFIC EXPERIMENTS] in Chinese No 9, 1979 p 1] 9296

TILLER-SEEDER FOR CORN--The tractor station of Laodian Commune of Huaxian in Henan Province has successfully developed a kind of tiller-seeder for corn based on the advanced method of "sowing in furrows and triangular setting of seedlings" of planting corn frequently used at this locality. The machine is rebuilt from a machine-drawn heavy plow with five plowshares and consists of two parts, a furrow that digs a channel for irrigation with a centralized fertilizing plow and a corn dibbler. It can complete furrowing, digging irrigation channels, performing centralized fertilization, returning cultivated soil to the furrow, mixing fertilizers and soil, leveling and smoothing furrows and channels, dibbling corn seeds (or row seeding), covering the ground with soil, and packing the soil, totaling nine operational procedures. This greatly elevated work efficiency. When drawn by a 54-horsepower or 72-horsepower East Is Red tractor, it can till and sow between 140 and 180 mu of land in 24 hours, equivalent to the work of 600 workers and 150 draft animals. The tilling and sowing quality is good. There are no broken ridges, and the percentage of germination is above 96 percent. Last year in spring, the machine was tested to sow 400 mu of cornfields. On the average, each mu produced an increased yield of between 120 and 150 jin over fields sown by hand. The machine can be used for multiple purposes, its construction is simple and its manufacturing cost is low (only 700 yuan), which are characteristics that favor popularization. Since it was rebuilt on the basis of the machine drawn heavy type plow with 5 plowshares, it is easily taken apart and can be easily reoutfitted as a 3-plowshare, 4-plowshare or 5-plowshare plow at will to suit interplanting operations of different crops and furrowing and sowing operations. [Text] [Beijing NONGCUN KEXUE SHIYAN [RURAL SCIENTIFIC EXPERIMENTS] in Chinese No 9, 1979 p 1] 9296

GRASSLANDS SURVEY--Hohhot, March 31 (XINHUA)--A nationwide survey of the country's grasslands will be carried out beginning April 1 with a view to accelerating the modernization of animal husbandry in China. The survey will take a year and a half. Most of the 11 stretches of grassland to be surveyed are located in the northeast, north and northwest China. China has 280 million hectares of natural grassland. The decision to make the survey was taken at a recent national meeting here. [Text] [OW311212 Beijing XINHUA in English 1210 GMT 31 Mar 80 OW]

CSO: 4020

LETTER CITES GANSU SUCCESS IN APPLYING SCIENCE

Beijing GUANGMING RIBAO in Chinese 14 Mar 80 p 1

[Letter from Jian Ying [0494 3841]: "Genuinely Devote Attention to the Spread and Application of Accomplishments in Agricultural Science and Technology"]

[Text] Recently comrades attending the Gansu Provincial Work Conference for the Spread of Agricultural Technology related how about one-third of the cultivated land in this province is currently without organic fertilizer, and how in two-thirds of the cultivated land insufficient fertilizer is applied. Harm done by disease, insect pests, weeds, and rodents is clearly on the rise again, and the area damaged by the growth of tall meadow grass alone amounts to more than 10 million mu. Work in the chemical treatment of seeds has not yet been restored to the levels of the 1960's. Comprehensive technological measures to relieve drought in arid prefectures in the central part of the province have not yet taken hold. One important reason for this state of affairs is that some leaders do not devote attention to the spread and application of accomplishments in agricultural science and technology. Even a large number of techniques that practice has demonstrated to be effective have not been placed on the agenda for extension elsewhere.

These comrades pointed out that in Linze County in the central part of the corridor to the west of the Yellow River, because people stuck to the old ways, were content with things as they are, and were accustomed to old techniques and old methods, per mu yields of maize were only 700 or 800 jin. During the past 2 years, the County CCP Committee leadership diligently summarized the lessons of experience and was able to raise per mu yields of maize to more than 1000 jin for 2 years in a row. They did this by taking account of the wind-blown sand, the aridity, and the salinity, which are three harmful characteristics of nature in the area, and by the spread of techniques such as suiting measures to the local situation, ploughing the soil deeply, increased applications of fertilizer, selection of superior varieties, reasonably close planting, much hoeing, and much planting with a drill to promote sturdy seedlings. This shows that if only attention is given to the spread and application of agricultural science and technology, agricultural production can be greatly increased.

They maintained that the crux of the expansion and application of accomplishments in agricultural science and technology lay in leadership at all levels, with attention given to the building of a corps of farm technicians, creating for them the required work conditions, study conditions and living conditions. In addition, it is necessary to formulate a policy for the spread of agricultural scientific and technical accomplishments to assure that the work of spreading this information is done in a solid manner. Each level of leadership organizations should set up a strict system of technical responsibility with a needed system of rewards and punishments. For every item to be expanded in application there should be a specific person responsible; technical files should be set up, and attention given to economic benefits and economic responsibilities. The spread of accomplishments should be done with slight expenditure of money, with results that may be seen quickly, and so that improvement in yields per unit of area will be increased. Basic means and measures should be stressed to prevent waste. In addition, provinces, prefectures, and counties should conduct summary, criticism, and comparison meetings at fixed periods on the spread of accomplishments in agricultural science and technology, with prizes being awarded to both advanced units collectively and to individuals with outstanding achievements in the work, and criticism and education given the laggards, with this work being a condition for promotion and determining grade.

9432
CSO: 4007

PLANNING YEAR'S RICE CROP: VARIOUS VARIETIES DISCUSSED

Editor's Note

Guangzhou NANFANG RIBAO in Chinese 29 Jan 80 p 2

[Text] Planting is already underway in the Hainan Administrative District, and once the period of "early spring" arrives in early February, planting will also begin in other places one after another. The selection and matching of good varieties of rice is an important measure in obtaining high yields of the early crop. Of course, just which varieties any given prefecture, or commune or brigade selects and how they match them must be decided on the basis of actual circumstances in each area. There can be no imposition of uniformity or deciding everything "with a single stroke." Each area has to give attention to summarizing local practices and experiences, be adept at absorbing good things from other places, learn the strong points of others to offset one's own weaknesses, and constantly improve scientific farming standards. The two articles printed here, "Need to Give Attention to Rational Matching of Rice Varieties," and "Several New Superior Varieties of Rice Introduced" are offered for reference.

Rational Matching of Rice Varieties

Guangzhou NANFANG RIBAO in Chinese 29 Jan 80 p 2

[Text] Rice varieties are selected on the basis of consistently high yields, good resistance to diseases and pests, and the meshing of one crop with another through a rational overall make-up of crops with early, middle and late maturing varieties being rationally matched in a way that tends to provide advantages while avoiding disadvantages, with thought being given to the late crop even as the early crop is being planted. Only in this way can large scale increases in yields be realized throughout the year.

At the present time, rice yields in our province are neither high nor consistent. The reasons for this state of affairs are numerous. One of the main reasons is lack of respect for natural laws with improper use of varieties. Experience from high yield communes and brigades throughout the province shows that in the central regions rainfall is most abundant during the mid period of the early crop, and particularly during the period of the "dragon boat water" when the rainfall is concentrated. During the latter part of the early crop, there are a lot of clear days with plenty of sunlight. Therefore, proper use of varieties calls for medium-maturing types principally such as "Qingerai" and "Guanger 104," and proper meshing with medium late-maturing types such as "Guichao No 2" and "Keliu," and with the early-maturing "Nanzao 33" and "Hongmeizao." In places where there are fertile fields and where there is plentiful fertilizer, fairly high standards of scientific farming, and a lot of people on scant land, the medium-late maturing varieties are best. In northern prefectures where climatic temperatures during early spring are low and where there are long periods of overcast and rainy days but where the "dragon boat water" is fairly light, mostly early-maturing or medium-maturing varieties are best, so that maximum use can be made of the rather fine weather conditions prevailing during the latter part of the early crop period, and so that the most benefit can be derived from the superiorities of the early rice for an increase in yields. In the Leizhou Peninsula and on Hainan Island in the south, the early crop is frequently troubled with spring drought and the "qingming wind" [of late March or early April]. During early and mid May there is the "hot dry wind," which affects spiking and flowering. But when temperatures are high in early spring, "Keliu" and "Xiao Jiahuo," which are medium and late maturing varieties, are best in order to make fullest use of daylight and temperature conditions to obtain increased yields.

Late rice varieties are rather complex in their make-up. Because the chill of autumn comes early in northern prefectures, early and medium-maturing varieties of late crop rice and hybrid rice is best if the "cold dew wind" is to be avoided. The central region is the principal grain producing region of our province. Per unit yields there are quite high, but natural conditions are complex and specific arrangements have to be made on the basis of varied conditions. Generally speaking, conditions for production are quite good. In places where the level of supervision and care is fairly high, not only may the classic medium and late maturing late crop rice varieties with fairly good resistance traits such as "Erbaiai" and "Baoxuan No 2" be selected for use, but also there can be a planned expansion in use of high yield varieties such as "Huazhuqi," which show resistance to bacterial blight. In places where typhoons are infrequent and bacterial blight slight, some sitting autumn varieties such as "Guichao No 2" and "Guanger 104" may be planted. In areas of medium to low yields and in fields where growing conditions are fairly poor, it is best to use the classic early and medium-maturing varieties of late crop rice that show good resistance traits and give fairly consistent yields. For southern prefectures where typhoons are frequent, varieties such as the late-maturing late crop rice, "baotaiai" should be selected or else temperature sensitive varieties such as the early rice varieties, "Guangbaiai" or "Zhayeqing," which are sitting autumn or hybrid rices that may be used as mid crops. Sitting autumn varieties such as "Guichao" are easily infected with bacterial blight, and thus are generally not suitable for extension into areas along the seacoast where typhoons are frequent.

In the extension of varieties to an area, both use of a single variety alone and a proliferation of varieties is to be avoided. Locally grown varieties must be relatively stable; the number of varieties cultivated over an area should not be too numerous; and there should be no more than two or three different varieties used in a single crop by each production brigade.

New Rice Varieties

Guangzhou NANFANG RIBAO in Chinese 29 Jan 80 p 2

[Text] "Hong 410" was bred by the superior varieties farm in Tongan County in Fujian Province. In 1979 it underwent experimentation for use as an early crop rice in prefectures throughout the province. Average per mu yields amounted to 697 jin and 9 liang, a 13 percent increase in yields over the comparable variety "Guangluai No 4." High yields were obtained from plantings in open fields.

"Hong 410" is an early-maturing variety whose growth period totals about 115 days. It has short stems, thin and straight leaves, strong tillering strength, and a high spiking rate with the number of effective spikes per mu numbering between 300,000 and 400,000. Each spike contains about 60 grains for which the per thousand weight is around 30 grams. It shows fairly strong resistance to rice blast, but is highly susceptible to sheath and culm blight. The seedling age period runs from 20 to 30 days. Basic rice shoots per mu number between 200,000 and 250,000.

"Hunanzao" was developed by the Huzhou Rice Research Institute in Sichuan Province. In 1979 it was subjected to experimentation as an early crops in all regions of the province. Average yields per mu amounted to 703 jin and 8 liang, an increase in yield of 14 percent over the comparable "Guangluai No 4," placing it in the first rank among early-maturing types.

Total vegetative growth period for "Hunanzao" is between 115 to 120 days. It is an early-maturing variety. Plants reach a height of 75 to 80 centimeters and spikes number from 250,000 to 300,000 per mu. They mature at the same time, and per thousand grain weight is 23 or 24 grams. Resistance traits are average, and it is suitable for planting in moderately fertile fields. It is usually sown in the period between "rain water" and "excited insects," (mid-February to early March) and seedling age is about 30 days. Suitable increases in the number of seedling transplants will assure a sufficient number of spikes.

"Qingsi 24" was developed by Shantou Suburban Agricultural Institute. Last year it was tested in all the prefectures throughout the province where it produced average per mu yields of 828.5 jin, an increase of 15 percent in yields over "Zhenzhuai No 11."

"Qingsi 24" has a total vegetative growth period of from 135 to 140 days. Plant heights are about 90 centimeters; plant shape is compact; spikes are short; grains are densely packed with each spike containing between

70 and 80 of them; fruiting rate is about 80 percent; per thousand grain weight is 28 or 29 grams; disease resistance is medium; and a shortcoming is that spiking is not sufficiently uniform. It is suitable for planting in fields of medium to high fertility. If sown from mid-February to early March, 100 to 150 jin of seeds per mu will be required. Seedling age is about 40 days. Each mu requires about 120,000 to 140,000 basic shoots.

"Suixuan No 1" was bred by the Guangzhou Municipal Agricultural Institute from a single plant strain of the IR 254-58-1 strain introduced from the Philippines. Last year it was experimented with as an early crop in prefectures throughout the province where it produced average yields per mu of 836 jin 6 liang for an 11 percent increase over the comparable "Keju No 17."

The vegetative growth period for "Suixuan No 1" totals about 140 days; plant height is between 85 and 90 centimeters; growth is vigorous; spikes are large and grains numerous with each spike bearing between 80 and 90 grains. Fruiting rate is in excess of 85 percent; per thousand weight of grains is 24 or 25 grams; disease resistance is moderate; it is tolerant of fertilizer and withstands lodging. It is suitable for planting in fields of moderate fertility. It should be planted around mid-February at the time of the "rain water." Seedling age is about 35 days. Each mu requires transplantation of between 150,000 and 180,000 basic seedlings.

9432
CSO: 4007

GUANGDONG

GUANGDONG PLANS MODERN RICE RESEARCH CENTER

IRRI Help for Center

Guangzhou NANFANG RIBAO in Chinese 25 Feb 80 p 1

[Text] In order to help our nation establish a modernized rice research institute, the International Rice Research Institute's deputy director, Dr Weijia [phonetic], heading a scientific unit composed of seven members, boarded an airplane in Manila in the Philippine Islands on the 23rd of this month to fly to Guangzhou. Together with the chairman of the Chinese Agricultural Institute, Fang Cuinong [2455 1897 6593], at the head of a group of scientists, they conducted a joint inspection program in our province.

On the 24th, the joint inspection team began an inspection of the Provincial Agricultural Institute and the rice, plant protection, and soil fertility research institutes of that institute. They also intend to visit and inspect the South China Agricultural Institute, individual communes in Dongwan County, and the Tonghu Farm in Huiyang County in order to compare and get an overall understanding of rice production and research in our province.

After the joint inspection team has carried out inspections for several days in our province, they will visit Hunan and Zhejiang to continue inspection. Later on, they will go to Beijing where they will study and formulate, in conjunction with the Chinese Agricultural Academy, plans for building an institute.

On the evening of the 24th, the deputy governor of Guangdong Province, Meng Xiande [1322 2009 1795], hosted a banquet to which he invited all the members of the joint inspection team.

When the team of scientists of the International Rice Research Institute arrived at Guangzhou, they were met at the airport by the head of the Provincial Agricultural Institute, Wu Dongjiang [0702 2639 3068], the deputy head of the institute, Fan Mingxian [5400 2494 6343], and the entire central and regional membership of the inspection team.

Ministry of Agriculture Aid

Guangzhou NANFANG RIBAO in Chinese 29 Feb 80 p 1

[Text] After a year of planning, designing and preparations to build a rice research center in Guangzhou with funds from the Ministry of Agriculture, formal work got under way not long ago at Shipai in the suburbs of Guangzhou Municipality.

Total amount of funds allocated to this project by the Ministry of Agriculture amounted to 3.3 million yuan, of which 1.2 million was for construction of the project and 2.1 million was for instruments and equipment. Total project area is more than 9,000 square meters, which includes a large laboratory building, a hot house, a mesh chamber [4853 1358], a dark room and dormitories. Instruments and equipment includes electron microscopes, programming electronic computers, artificial climate equipment and other modern equipment. The entire project is slated for completion by the end of this year.

Once the rice research center has been built, it is planned to establish five research offices including rice breeding, genetics, ecology, breed resources, and cultivation, and a scientific and technical information unit. The research center based in Guangdong will enhance academic exchange with each of the countries of Southeast Asia and with the International Rice Research Institute. In future it will play a role in the promotion of the development of our country's rice production and scientific endeavors.

9432
CSO: 4007

NEW GUANGDONG RICE VARIETIES DISCUSSED

Guangzhou NANFANG RIBAO in Chinese 11 Jan 80 p 1

[Article by Zhou Xun [0719 6598]: "Work With Improved Varieties of Rice 'Goes Up One More Flight.' Rice Institute of Provincial Agricultural Institute Has Bred "Guichao No 13," Which Is Superior to "Guichao No 2," as Well as Other New Rice Varieties"]

[Text] The Rice Institute of the Provincial Agricultural Institute has developed an improved variety of rice that is superior to the "Guichao No 2," which is currently being popularized. It is "Guichao No 13." At the same time it has also bred other new varieties of rice. Following experiments comparing varieties and regional testing, these new varieties have been proven to produce increased yields or possess other excellent characteristics that are better than prevailing superior varieties that ripen at the same time. By adjusting methods to local conditions, they may be spread in test plantings throughout the province.

"Guichao No 13 is a new variety that has been bred from the "Guichao" line. Following comparative tests last year with other varieties using high fertilizer and low fertilizer, yields for this variety were the best. As compared with comparable variety "Qingerai," it had increased yields of 13.8 percent and 21.4 percent on two separate occasions. It also showed strikingly increased yields as compared with "Guichao No 2." This improved variety has a good shape, large spikes, and large grains. Turning of color late in the season is good, and it possesses broad adaptability. It is suitable for growing either as an early or a late crop in this province, and it has a maturation period identical to that of "Guichao No 2."

Two new improved varieties of early rice have been bred. One of these is called, "Huafengzao." It is an early maturing improved variety with high yields. It is characterized by fine plant shape, good turning of color later in the season, rather high fruiting rate and per 1000 weight of grains, and increased yields attaining remarkable standards. Another is called "Qingguiai No 4." It is a mid to late maturing variety. In comparative testing of varieties, it showed strikingly increased yields as compared with "Qingerai." Its characteristics are less need for fertilizer than other varieties, ease of growing, and suitability for "sitting autumn." When grown in clayey fields, it shows good change of color in late season, and it is suitable for planting in clayey fields and in medium-grade paddy fields.

Newly bred improved varieties of late rice number five. They include "Aibaizao" and "Xiaobaizao," both of which are early maturing high yield improved varieties that avoid the cold dew wind. They are characterized by relatively less need for fertilizer, and suitability for planting in low yield areas in the middle of our province. "Aibaizao" early maturing variety has good bumper yield characteristics, but it is unable to resist bacterial blight. It is suitable for planting in the central and northern parts of our province and in areas free of bacterial blight. The new varieties, "Guangtangbian 714" and "Guiyang 124," are later early maturing improved varieties. Test planted as a late crop last year in Hua and Fanyu counties, they achieved increased yields universally. Characteristics of the late crop mid to late maturing variety "Huazhu" are relative resistance to bacterial blight, and less fertilizer requirement than for other varieties. In regional tests of varieties throughout the province, it ranked second. It is suitable for planting in coastal regions where typhoon rains are fairly frequent, in disease areas, and in medium-grade paddy fields.

9432
CSO: 4007

RICE, WATER, IRRIGATION DISCUSSED

Guangzhou NANFANG RIBAO in Chinese 21 Feb 80 p 3

[Article by Jiang Bin [3068 3453]: "A Talk About Water for the Fields in the Season When Preparations for Plowing and Sowing Are Being Made"]

[Text] Ever since the onset of autumn, most places in our country have had little rain or snow, and during the season when preparations are being made for plowing and sowing, "spring rains may be as dear as oil," and "precautions should be taken," I fear, over the vast expanse of farmland.

In our province the area of rice fields accounts for about 80 percent of the area planted to grain crops, and rice's requirements for water are vastly greater than those of any other crop. Ordinarily the total amount of irrigation water required for early rice is about 220 cubic meters per mu of land. Late rice takes about 300 cubic meters per mu, or as much as between three and five times the amount required for wheat, peanuts, and sugarcane. But not all of this large amount of water is absorbed by the seedlings. The amount includes water transpired by the leaves, water that evaporates, and water that seeps away in paddy fields. Paddy rice is inextricably bound up with water. For example, 75 percent of the weight of a rice seedling is water. Rice depends on water to make organic materials and, through the solvent action of water, fertilizer is changed into nutrients that can circulate within the plant to become the lifeblood that maintains the plant's vitality. Thus, water is, in reality, the "main switch" for controlling fertilizer, and it is the "air regulator" for the microclimate of the fields with the extraordinary ability to regulate temperature and "increase energy." There is scientific truth in the saying, "paddy rice, paddy rice; where there's a paddy, there's rice."

In the various stages of growth of rice, however, requirements for water are different. In the early period of growth, requirements are for "a pool of water"; in mid-period, they are for "scant water," and in the late period for "a sprinkling of water." This shows the law of "much-slight-a little more." During the time of spring plowing, the water needed is even greater, fields becoming "afloat in water." Unless the fields are drenched with water, the soil will not easily be plowed and harrowed into fine bits, and the goal of "deep, soft, fertile, and smooth" will not be attained.

Taking care of the water in the fields preparatory to plowing requires attention to the two key points of "leading water in" and "lowering the water." So-called "leading water in" means providing channels, as the situation requires, for water to enter the fields from rivers, springs, ponds, or wells. Particularly in situations where rainfall is scant, a system whereby the paddy fields can be irrigated and drained rapidly so that the fields can get water rapidly is necessary. If the channels are winding, or if they are not smooth, much of the water in them will be lost. Therefore, when preparing for plowing in large irrigation areas, it is essential that main channels, branch channels, criss-crossing channels, field channels and sublateral channels be provided for irrigation and drainage. For small irrigation areas an irrigation and drainage system consisting of branch channels, criss-crossing channels and sublateral channels is needed. Every effort should be made to give the fields separate irrigation and drainage channels so the water may be used with facility. When a cloudburst occurs, it should be possible to drain water from the fields at once. When water is scant, it should be possible to stop up the water and impound it in the fields so that it will not run away at will. The fields should be managed according to the season so that the "fields serve the seedlings."

The other aspect is attention to "lowering the water," which applies chiefly to land that lies in close proximity to river networks or low-lying fields where a lot of water accumulates, or waterlogged fields to which lowering of the water table must be given attention. When we speak of underground water, we mean the water in the soil beneath the fields that is just above the first water-impervious layer or nearly impervious layer. It is formed by irrigation water, rain, and the trickling of water from rivers. By water table is meant the distance of this layer of underground water from the surface of the fields. Ordinarily, the root system of rice is concentrated in the top five cun of the surface of the fields. If the water table is lowered to a point beneath the roots, not only will the wetness of the soil be reduced, the circulation of oxygen be increased, decomposition of fertilizer be promoted and poisonous substances be carried away, but also conditions can be created for alternating wet with dry planting of crops; great improvements can be made in the physical structure of the fields, and more low yield fields can be "promoted" rapidly to high yield fields. In addition to being a part of water conservation facilities, when water drainage ditches outside the fields are dug to a depth of two chi or so, remarkable results can be obtained.

9432
CSO: 4007

RICE SOWING RATES GIVEN

Guangzhou NANFANG RIBAO in Chinese 28 Feb 80 p 3

[Article by Li Ye [2621 6851]: "Amount of Seeds To Be Sown for Paddy Rice"]

[Text] When a single grain of rice is sown in the ground, it will produce one spike at the very least, and under good conditions, it may tiller into between 10 and 20 spikes. Considering that each spike has an average of 80 grains, a single grain of rice may increase from 80 to 1,600 grains.

In our province at the present time, for each mu of field crops, between 20 and 25 jin of seeds are sown, which amounts to between 400,000 and 500,000 grains. Figured at the minimum 80-fold increase, per mu yields should run to between 1,600 and 2,000 jin. If tillering were to be added into the calculations, the amount would be much higher. In actuality, however, most rice yields are around 500 to 600 jin. Using calculations of an eight-fold increase, at most only 7 or 8 jin of seeds will serve a purpose. Where will the remainder of the seeds go? First of all, paddy rice seeds do not have a 100-percent germination rate. Second, unless the seeds are pressed into the ground when they are planted in the seedling beds, some of them will be eaten by rodents and birds. Third, if the seeds are planted too close together, the seedlings will impinge one upon the other, be crowded, obtain insufficient amounts of nutrients and die young. Fourth, because of insufficient care, some may die from cold (early rice) or from high temperatures (late rice); fifth, if the seedling bed is not well prepared and is uneven, when the seeds are planted in it those that are high will be scorched by the sun and those that are low will be drowned. From 15 to 20 jin of seeds can be lost in the above ways. If before seeding we select only the best seeds so that their germination rate will be increased, and if we prepare the seed bed well and take care with the planting of the seeds, pay attention to care of the seed beds, and prevent rotting of the seedlings or harm from disease and pests, these shortcomings may be entirely overcome.

It should be pointed out that excessive emphasis on close planting with resultant overseeding of the seedling fields will cause spindly seedlings that are unable to withstand cold or the hot sun. When transplanted to open fields, though able to form spikes, the spikes will be small and the number of grains in them scant, and yields will not be high. Thus, it should be emphasized that a proper amount of seeds should be planted in seedling fields with about 50 to 60 jin per mu being planted. This is the effective way to get the most out of the seeds, to develop strong seedlings, and to obtain high yields.

In that case, what is the proper number of seeds to be planted for every mu of open fields? If per mu yields of 800 jin are taken as the criterion, and if it is figured that each seed will grow a main spike with 20 tillers for a total yield of 240 grains, only 3 to 4 jin need be planted. If something is added for the various losses that can occur, 5 or 6 jin of seeds should be enough. Of course, as a prerequisite there should be a high standard of scientific care.

9432
CSO: 4007

MEASURES TO PROTECT RICE FROM COLD DAMAGE DISCUSSED

Editor's Note

Guangzhou NANFANG RIBAO in Chinese 3 Feb 80 p 2

[Text] In order for early crop production to truly be "early," it is necessary to be firm in proceeding from local realities, investigate and grasp natural law and carry out scientifically precise farming. Wengyuan [5040 3293] County is located in a high, cold mountainous area. From the basis of truly summing up the masses' experience and practice, last year this county thoroughly implemented the new technology of "heat-soaking seeds to hasten sprouting" and consequently managed to overcome spring frosts during the sowing and seedling periods. This created good conditions for early transplanting and provided a lot of control over early and late crop production, resulting in the highest agricultural yields for the whole year. Their spirit of innovation and attention to realities is worthy of praise and their techniques of planting and raising seedlings should be provided to all for study.

New Method for Hastening Sprouting

Guangzhou NANFANG RIBAO in Chinese 3 Feb 80 p 2

[Text] Last year, Wengyuan County, located in the northern Guangdong mountainous region, completely implemented Yanzhuang [1484 8369] Commune's new technique of "soaking seeds in boiling water and mixing with huotuni [3499 0960 3136] to hasten sprouting (briefly, heat-soaking seeds to hasten sprouting). This technique overcame spring frosts and brought the season on earlier which produced an abundant early crop. It also avoided the "cold dew wind" for the late crop and resulted in an increased harvest.

The technique of heat-soaking seeds to hasten sprouting was developed by Zheng Xiulou [6774 0208 2869], a seed soaking specialist of the Shangpan [0006 4149] Production Team in the Liling [4409 7325] Brigade, after many years of experimentation.

The technique of heat-soaking seeds to accelerate sprouting is as follows: first the rice seeds are cleaned and dried in the sun and wind, then sift the dried (huotuni), boil the water, prepare the shovel, rake and nylon film, and sweep off the area for heat-soaking the seeds. Next, prepare the three items seeds, (huotuni) and boiling water in ratios of 10:3:3 or 10:4:4. Put the seeds and (huotuni) in the heat-soaking area and mix them together, and while adding water use the rake to quickly stir them, making sure that the (huotuni) evenly covers the seeds (the pile should be sufficiently wet that the seeds stick together, but so that no water runs out the bottom). At this point use the shovel to flatten the pile into a round, flat shape about 1 chi 5 cun high, but not compressed tightly. This is then covered with the nylon film. Then, about 5 or 6 hours later, add more water and re-pack the discs, causing the seeds to sprout evenly. The added water should be about 10 percent of the seed weight and the water temperature should be between 80 and 85 degrees Centigrade. There should be enough water so that the seeds stick to each other slightly. After the seeds have been remixed evenly they should be recovered with the nylon film. The second day, the pile should be remixed every 5 or 6 hours, and the rules of growth "dryness grows roots, moisture grows sprouts," "cold grows roots, warmth grows sprouts" and "oxygen grows roots, lack of oxygen grows sprouts" should be followed in adjusting the seed mixture's water, temperature and air. After the seeds show some whiteness, care against over-watering should be taken. When remixing the seeds water should be added once or twice, the temperature about that of bath water, and about 3 to 5 percent the weight of the seeds. The amount of moisture in the seed pile should not be enough to make the seeds stick together. After the seeds begin to sprout, the temperature can be gradually raised, taking care not to burn the seeds (during the whole process the temperature in the seed pile should be limited to 30-35 degrees Centigrade). If the temperature is too high the pile can be remixed or else dried in the air, or the cover can be removed. The entire process, from start to finish, can be completed in three days. Before planting, the seeds should be spread out in the air to dry. After the sprouting has taken place, if the weather is unfavorable, the sprouts can be mixed with dry (huotuni) to lower the moisture level in the seed pile, and the seeds can be piled up 3 to 5 cun deep and covered over with (huotuni), taking care to mix them up at the right time. In this way planting can be delayed for more than 10 days without danger of mildew.

When using this method to hasten sprouting attention should be given to the following points: (1) (huotuni) must be used, as grass and wood ashes are not suitable for mixing with the seeds; (2) heat-soaking seeds with boiling water will hasten growth but heat-soaking sprouts with boiling water will kill them;

(3) the size of the seed piles can be from 200 to 1500 jin, the mixing should be even, and after mixing the piles should not be compressed, with most of the work done indoors; (4) this technique is best with early rice and can also be used for intermediate and late rice, but special care must be given to avoid scorching the sprouts; (5) a particular person should be put in charge to exercise special attention and careful management.

Early Planting to Avoid Fall Cold

Guangzhou NANFANG RIBAO in Chinese Feb 80 p 2

[Text] "In planting early crops, plan for the late crops; early crops create conditions for late crops to avoid the 'cold dew wind'." When our reporters were visiting the countryside they often heard the cadres and commune members saying this.

This saying is quite logical. The "cold dew wind" occurs every year and to attempt to avoid it by being concerned only with late crops will not do as this must take place by grasping the early crop. Practice proves that if the early crop season is not firmly grasped or if improper varieties are used the early rice will be slow in maturing, which will make the late crop season late as well, thus making the "cold dew wind" unavoidable and resulting in losses. Last year, some parts of Meixian [2734 4905] Prefecture had increased production, but because the late crops could not avoid the "cold dew wind" there was reduced production. Because some other areas paid attention to grasping the early crops they created conditions for the late crops to avoid the "cold dew wind" and thus gained control over production, resulting in increased production for both the early and late crops. The latter conditions prevailed for Xinguang [2450 0342] Brigade of Pingan [1627 1344] Commune in Wuhua [0063 5478] County. This brigade is 600 meters above sea level and in the past because of late transplanting of the early crop or because of late maturing varieties there was very little control over late crop production and reduced harvests were common. Last year they made a good selection of varieties, the early rice was chosen for high production and early and mid-ripening. Moreover, the transplanting was done on time. This provided control over late crop production and smoothly avoided the "cold dew wind." On the foundation of increased early crop production, the total late crop production was 76 percent higher than that for the same period the previous year.

Historical experiences ought to be kept in mind. This year, in order to avoid the "cold dew wind" for the late crops, Meixian Prefecture employed the following measures, beginning with the early crops: 1. Proper selection of varieties, emphasizing the compatibility of the early and late crops, so that the early crops would have high production and the late crops have stable, high production. 2. Firmly grasp the season, so that the rice plants are definitely transplanted before the Qingming Festival [usually April 5th or 6th] and harvested around Dashu [about July 23rd]. 3. The early crops will determine the placement of the late crop sprouts, and this should guarantee that the late crops can be planted on time and transplanted when they have been raised to the right age. It appears that this way is correct and that the method can be carried out.

Use of Nylon Film

Guangzhou NANFANG RIBAO in Chinese 3 Feb 80 p 2

[Text] The use of nylon film to cover sprouts (briefly, nylon sprouting) is an excellent method for preventing cold damage, causing early sprouting and raising strong sprouts during the low temperature spring sowing periods. It is already widespread in the countryside here.

Although there certainly are many advantages to nylon sprouting, nonetheless, unless attention is paid to changes in the weather and corresponding changes in management take place, then nylon sprouting can also produce various degrees of sprout damage, as severe as 80 percent of the crop. One reason for sprout damage is that if the sprouts remain covered for a long time during low temperatures and cloudy, rainy weather, excessive carbon dioxide will be produced under the cover, resulting in a shortage of oxygen for the sprouts. A second reason is inattention to overheating of the sprouts. When low temperature, cloudy and rainy weather suddenly clears the temperature under the cover changes dramatically and the sprouts are unable to respond to this. A third reason is that a long period of low temperatures with cold and rainy weather causes excessive humidity within the film and an accumulation of moisture on the film which causes soaking and easily leads to seedling blight. Therefore, the key to successful nylon sprouting is to follow differing weather conditions and the growth stages of the sprouts in making timely and reasonable adjustments, lifting the base to circulate air, lifting the film to warm the seeds, providing suitable irrigation and fertilizer.

The management of nylon sprouting can be divided into three stages: The first is the covered stage. This is the dominant situation from seed sowing to prior to panicle differentation and it causes early germination and quick growth. If there is an extended period of low temperature with cloudy and rainy weather, then when the winds are soft and the rain has stopped the two bases of the cover can be lifted for a short time to exchange the air and prevent the occurance of disease. The second stage is warming the sprouts. After panicle differentation there should be gradual airing to warm the seeds. Whenever there is clear, warm weather, generally from 9 or 10 in the morning to 4 or 5 in the afternoon, the cover can be lifted. On clear days with high temperatures care must be taken to avoid high temperatures which can easily cause "sprout scorching." The third period is that of uncovered sprouts. In the 10 days prior to transplanting and when the sprouts have been thoroughly warmed, gradually uncover and sun them. It is best to choose overcast or cloudy days to uncover the sprouts so there is not too great a difference between the temperature outside of and under the cover. This will help the sprouts respond positively to the environmental conditions. However, if there is frost, high winds or temperatures sufficiently low to adversely affect sprout growth they then should be recovered.

Nylon sprouting requires a good fertilizer base, with a lot of phosphorous and potassium fertilizers but no nitrogen fertilizer. Fertilizing should always be done when the weather will warm up and never done when the weather will suddenly turn clear after a period of low temperatures with clouds and rain. In short, successful nylon sprouting demands a strictly scientific attitude and good results can be obtained only under management according to the factors of time, place, weather and sprout conditions.

11582
CSO: 4007

GUANGDONG

PROVINCE SETS RECORD IN PEANUT OUTPUT

Guangzhou NANFANG RIBAO in Chinese 16 Jan 80 p 1

[Article by Huang Xiangguang [7806 4382 0342]: "Total Peanut Production Set New Record in Our Province Last Year"]

[Text] Through diligent implementation of the spirit of the Third Plenary Session of the Central Committee of the CCP 11th Congress, and by fitting measures to local conditions in adjusting the make-up of production, rural villages throughout our province reaped a bumper harvest in peanuts last year even while reaping a bumper harvest in grain. Gross production amounted to 8.17 million dan after the output in excess of production targets was awarded commune members. This was a new record. The increase in production was greatest in the prefectures of Shantou, Huiyang, Shaoguan, Meixian, and Foshan.

Following rational adjustments in the composition of agricultural production, the area planted to peanuts in our province last year was enlarged by 130,000 mu over the previous year. In many places, crop rotation between paddy rice and peanuts was put into effect for the betterment of formerly infertile fields with low yields, with bumper harvests being obtained for both grain and oil. The Xinlian Brigade of the Humen Commune in Dongwan County is an immigrant brigade on newly reclaimed land, which had very low grain production in the past due to the thin and infertile quality of its soil. In recent years, however, by fitting measures to local conditions and rotating peanuts with paddy, they attained bumper harvests for both oil and grain and smoothly completed their quotas for state requisition purchases of grain and oil. Average cash disbursements to commune members also rose from 91 yuan per member in the past to more than 140 yuan.

In order to improve peanut yields per unit of area, each place instituted various forms of a system of responsibility, and to boost the enthusiasm of the masses of commune members even further, five changes were universally adopted. These were: change inferior varieties for superior varieties; change low fields to high fields; change shallow ditches to deep ditches; change delayed planting to planting in the proper season with reasonably close planting; change inadequate base fertilizer to the spreading of adequate base fertilizer without side dressing followed by early side dressing; and change careless planting and careless care to careful planting and careful care, thereby increasing per unit yields of peanuts.

9432
CSO: 4007

'NANFANG RIBAO' COMMENTS ON YEAR-END DISTRIBUTION

Guangzhou NANFANG RIBAO in Chinese 23 Jan 80 p 1

[Text] Based on an increase in production and income in most districts, our province has begun early work on year-end distribution in rural communes for the year 1979. Attention is paid to various policies such as distribution according to labor. The income of most commune members will increase significantly over that of last year. At present, we must refrain from complacency and impatience, and thoroughly resolve existing problems so as to perfect work on wage distribution, and to further mobilize the activism of the masses in order to promote work on spring planting.

Some time ago, innumerable ways were devised to develop rural subsidiary industries in various localities with a view to augment collective income, which serves as a foundation for greater economic welfare among commune members. We must presently emphasize the principle of distribution according to labor, and put our policy into practice. In accordance with an increase in collective income and the policy of distribution according to labor, reward is to be commensurate with work. This is the core area of our year-end distribution work, a task not to be slighted. We must adhere to the system of responsibility promulgated in the beginning of the year, and reward or penalize members accordingly. Work teams and members who made significant contributions to the collective economy should be duly rewarded. We must not revise our policy because we are jealous of others' rewards, no matter how great the amount is. If we do not follow the policy, the people will lose faith and respect for the party, and the activism of the masses will be dampened. Even though the system of reward and penalty is not perfect, we should wait till after the end of the year for discussion and revision.

We must integrate year-end distribution work with strengthening ideological work. We must encourage advance teams and members to relate their experiences as to how to increase our economic welfare. We must be bold to seek wealth in our socialist system under the directives and guidelines of the party, establish the sense of wealth as something honorable, and eradicate such a ridiculous idea advocated by the "gang of four" and Lin Biao as "wealth being synonymous with revisionism." We must cure the phobia among some of our comrades of seeking wealth, so that each work team will feel uninhibited to develop its collective economy, and each member automatically contributes his share toward the common good. We must lead those work groups and members who are doing less well to emulate advance units. We must bring forth their activism and have them try by all means to promote their collective economy so that they may increase their income this year.

We should help those teams which are slow in their distribution work to accelerate their pace of work. For various reasons, there are still some areas in our province where distribution work proceeds slowly. Their accounting work has not been completed and they have not come up with appropriate plans for the purpose. There are also areas where distribution plans have been laid down but not enforced. Such conditions must be corrected immediately. The few areas which suffer natural hazards should be offered help in distribution work. Concrete help should also be given to those places where files were destroyed by floods or where there are not enough accountants and hence are suffering from a lack of guidelines for distribution. Some places have made organized efforts to assist these less fortunate areas to reestablish and settle their accounting work, and have greatly accelerated their year-end distribution work. This method can be extended to other similar localities.

In order to further increase members' income, teams which have already laid down distribution plans should reexamine their distribution work. According to the situation in some localities, the previous distribution plan was based on an estimate of planned production. Quite a few of these estimates were biased. This, coupled with errors and missing information, created the problem of distribution below what it should actually be. As has been attested to in quite a few places, thorough reexamination could lead to an increase in member income and welfare. It goes without saying that in the course of reexamining a distribution plan, attention must be paid to the interrelationships between the collective and the individual members. It should be made clear that the ratio of members' income and collective outlay be reasonable. On the other hand, we should prevent excessive collective outlay. On the other hand, we should also prevent excessive wage distribution.

One of the important aspects pertaining to the implementation of a thorough plan for distribution according to labor is the problem of debts incurred from loans. Though many communes have already secured portions of loans extended, the general situation is that many loans remain unpaid. One of the factors which led to this situation is that some of the rank-and-file cadres are unwilling or are intimidated to ask for loan repayment because of fear of losing face or because they are the debtors themselves. In handling this problem thorough ideological work must be conducted among these cadres while efforts are made to continue thorough work on maintaining existing policies. Care should be given to cadres who are having financial difficulties. At the same time, they should be convinced of the interests of the collectives so that they thoroughly grasp work on loan repayment. With regard to those members who are potentially able to repay their loans but who have not done so, ideological work should also be intensified. This can be done by using grain distribution as a means to enforce loan repayment. This can greatly help regain part of the capital thus consumed.

In completing work on year-end distribution, efforts should be made to encourage members to summarize their work experiences in 1979 with regard to policy implementation and production goals. Greater success can be attained this year if we summarize our past experiences, devise key measures to regulate proportional production of staple and cash crops, plan on a diversified economy, organize commune enterprises, mobilize mass efforts and put policies into practice, and improve our fallowing and spring planting tasks in order to develop production in an all round manner.

9471
CSO: 4007

SHUNTE COUNTY DISTRIBUTES 220 YUAN PER CAPITA

Guangzhou NANFANG RIBAO in Chinese 21 Jan 80 p 1

[Text] The average per capita income of the 560,000 commune members in Shunte County in 1979 was 220 yuan, which was 46 yuan higher than that in 1978, attaining the highest wage recorded since collectivization.

Shunte County is well known in our province for its production of such economic products as sugar cane, mulberry trees, and pond fish. These three commodities comprise 73 percent of the county's acreage, and each of which ranks first in production in the province. During the period of "gang of four" and Lin Biao, the development of economic commodities was downgraded as a capitalist attitude to "belittle grain production and emphasize a money economy." Such an attitude hampered economic developemnt, which was very slow at the time. Last year, the cadres of this county seriously applied the spirit embodied in the Third Plenary Session [of the 11th Party Central Committee] and the party's policy to accelerate agricultural development. They furiously criticized the leftist line and resumed production of economic commodities according to local conditions and superior environmental factors.

Pisciculture is the leading economic sector in the county. Fish ponds comprise 248,000 mu, or 38 percent of total cultivated land. After the Third Plenary Session [of the 11th Party Central Committee], greater efforts were made from the commune to the team level to promote fish farming. A policy of "one reward and five regulations" was made. Surplus production was duly rewarded. At the same time, regulations were made to designate management personnel, field maintenance, production quota, production inputs, and work points and wage structure. The activism of the majority of commune members was mobilized, promoting the development of fish farming. Last year, the total output of pond fish in the county exceeded 100 million jin, which was 5 percent higher than the highest record in the county's history. The county was 14 days ahead of schedule in fulfilling its procurement contract with the state, and the quality of fish also increased significantly. The income from fish ponds in 1979 was 53,210,000 yuan, which was a 31 percent increase over that of the previous year. The production of sugar cane and silk cocoons decreased slightly owing to low temperatures, protracted light rain, and gusty hurricane winds. While all work teams were keen in grasping production work they also allocated their labor efficiently in order to greatly develop diversified crop production and rural industrialization. The income from diversified crop production last year in the county exceeded the previous year by 1.25 times; and the income from rural industries developed at the team level increased 15.7 percent.

The various development projects have led to a great increase in collective income and raised the amount for distribution.

Fish ponds in Longjiang Commune make up 62 percent of the commune's total area. In the past few years, the commune party committee was wary of making pisciculture its economic specialty. Last year, encouraged by the spirit of the Third Plenary Session [of the 11th Party Central Committee], the commune decided to specialize in pisciculture. A comprehensive development plan was made to encourage pisciculture along with diversified crop production and rural industrialization. The average per capita income was 230 yuan, which was 20 percent higher than the previous year.

By raising procurement prices for subsidiary crops and rural industrial products, the state has benefited the peasants of the county. This is one of the factors leading to a rise in member income. Last year, the state's restructuring of procurement prices for pond fish, sugar cane, and silk cocoons led to an increase in income of more than 20 yuan per person in the county.

The rise in collective income and distribution and the development of rural household subsidiary industries have led to a significant increase in rural savings. By the end of last year, the savings deposited in credit cooperatives in the county reached over 47,540,000 yuan. The average per capita savings deposit in the county was 84.89 yuan, which was a 37 percent increase over the previous year. This rate of increase was also unprecedented since liberation.

9471
CSO: 4007

LETTER URGES STEPS TO OVERCOME ROTTEN SEEDLINGS

Guangzhou NANFANG RIBAO in Chinese 12 Jan 80 p 1

[Letter from Wen Huaguang [3306 5478 0342] and Wei Qingquan [7614 3237 3123]: "Prevention of Seedling Rot Requires Attention to the Selection of Fields for Seedlings and Their Care"]

[Text] Comrade Editor:

Rotten seedlings from the spring sowing means both a waste of grain and a delay in the production season; prevention of rotten seedlings is, therefore, an important issue for early crop production. We have learned through inquiries that for 6 years in a row beginning in 1974, six production teams in the Chengjiang Production Brigade of the Bingcun Commune in Mei County have experienced virtually no seedling rot in their planting of seeds during the first 2 weeks of February each year. Quantity of seeds used per mu of paddy is only about 30 jin. Last year's early crop planting of "Guichao" used only somewhat more than 20 jin of seeds per mu, but yields steadily increased. The knowledge they have gained from experience is that prevention of rotten seedlings must begin with proper selection and care of seedling fields.

The 11 production teams are extremely particular about their selection of seedling fields. First, they require buildings or hills or such features to act as a screen, with the fields facing south in full sunlight. Second, water conditions must be good with easy drainage and easy irrigation. Third, is selection of sandy soil of medium fertility. They put in even greater amounts of effort in taking care of the seedling fields. Where others may often hurriedly plow and harrow the seedling fields when spring comes round, they plow the seedling fields for the early crop just as soon as the autumn harvest is in and winter planting has been completed so that the soil will sun. Around the time of the winter solstice they break up the clods of earth, clean up debris, and plow again so that the soil will be thoroughly sunned, and so that the warmth of the soil will be increased. This strengthens the ability of the seedlings to withstand cold. At the same time, before watering and harrowing the fields, they put down good quality pig manure and apply fertilizer with a high potassium and phosphorous content so that the growing seedlings will green, strengthen, not become dark and tender, will develop a good root system, and will be fairly able to withstand cold.

Additionally, they give attention to care of the seedling fields after seeding, covering them with wood and grass ashes when the shoots are coming up and using water to regulate warmth to guard the growing seedlings against cold.

9432
CSO: 4007

FOSHAN PREFECTURE CARRIES OUT FIELD PREPARATIONS

Guangzhou NANFANG RIBAO in Chinese 12 Jan 80 p 1

[Article by Wu Jiongwei [0702 3518 5588]: "Great Upsurge in Plowing Preparations Taking Place in Rural Villages in Foshan Prefecture"]

[Text] A great upsurge in preparations for plowing is currently underway in vast rural villages of Foshan Prefecture. According to statistics, more than 52 million dan of assorted mud fertilizers have been accumulated for the early crop, an increase of 3 million dan over the same period last year. Pond mud has been carried for 33,000 mu and more than 42,000 mu of sandy fields have had mud added to them. This is an increase of about 50 percent over last year in these two categories.

At the end of last year the Foshan Prefectural CCP Committee deployed for the preparatory plowing work for this year's early crop. According to the individual circumstances of each county in terms of its surrounding fields, sandy fields, hilly fields and pond areas, each county placed special emphasis on fertilizer while at the same time doing a good job of self-contained projects for water conservation in preparation for planting. In low-lying Doumen County where the fields are sandy, there are abundant resources of river mud. Here they mustered the masses in a great effort to put the mud on the fields, and by the beginning of this month, mud had been added to more than 15,000 mu. Enping County, which is a hilly prefecture, made a big effort to increase fertility of the soil in a county where soil fertility is low. Ninety percent of the production brigades throughout the county have already gone to work, and an area of 70,000 mu has had its fertility increased, and an additional 7.18 million dan of mud fertilizers of various kinds have been accumulated. Shunde, a prefecture with many ponds, not only completed the mudding of its mulberry lands, but also did a lot of work fixing and dredging the ponds. Communes in mountain regions emphasized preparation of the soil there, doing a good job of getting ready to build forests.

In order to infuse preparations for plowing and production with urgency and realism, all levels of the party organization in Foshan Prefecture earnestly strengthened leadership. The CCP Committee of Xinhui County divided the entire county into three strips and convened a battle conference in each strip on preparations for plowing, with the principal comrades in charge in the County CCP Committee taking the lead and the secretaries of each commune CCP committee in each strip participating. These conferences made timely summary of the experiences of Shuangshui Commune in putting fish in suitable places to breed, and of Hongping and Gujing communes' experiences in a great effort at deeply turning under mud added to the fields. They vigorously promoted the launching throughout the county of preparations for planting and production.

9432
CSO: 4007

GUANGDONG

BRIEFS

GUANGDONG SUGAR OUTPUT--Three large sugar mills in Guangzhou Municipality, the Zini, Shitou, and the Guangzhou mills, have delayed sugar cane pressing so as to keep in step with the agricultural season and to await availability of cane. (The delay is for only 10 to 15 days more than during the last pressing season.) During the first 10 days of pressing, these mills have produced more than 470 tons more sugar for the state than last year to create more than 472,600 yuan more profit for the state. For various reasons, sugar mills formerly often began pressing sugar cane before it was fully mature and when the sugar content was very low. The low rate of sugar production caused losses for the state. During this pressing season, each sugar mill conscientiously prepared production plans on the basis of the amount of cane available and the sugar content of the cane. Less cane was pressed when sugar content was low; when sugar content was high, more pressing was done. Because of the delay in pressing, the cane entering the mills is more mature. During the first 10 days of pressing at the large Zini, Shitou, and Guangzhou sugar mills, absolute value of the sugar content of the cane averaged 0.72 percent, 1.32 percent, and 1.06 percent more than last year to create the conditions for greater production of sugar. [Text] [Guangzhou NANFANG RIBAO in Chinese 10 Jan 80 p 1] 9432

CSO: 4007

NEW FEATURES IN DEVELOPMENT OF AGRICULTURAL REGIONS OUTLINED

Beijing DILI XUEBAO [ACTA GEOGRAPHICA SINICA] in Chinese Vol 34, No 2, Jun 79 pp 104-115

[Article by She Zhixiang [0152 0037 4382] of the Jiangsu Institute of Geography: "New Features in the Development of Agricultural Regions and New Problems in the Arrangement of Agricultural Production in Jiangsu Province"]

[Text] Agriculture is the foundation of the national economy. It plays a decisive role in the persistence, stability and rapid development of the national economy. To accomplish the task of realizing the four modernizations within this century, the state will quicken the development of agriculture from all sides and will concentrate major efforts to do the work in agriculture well and as quickly as possible. Under such a situation, the urgency in studying zoning of agricultural regions is even more obvious. If there is a scientific zoning of agricultural regions, it will provide a more systematic basis for the leadership and planning departments of agriculture to develop agricultural production to suit measures to local conditions, increase self consciousness in planning work and reduce blindness. Scientific research departments should join together with the responsible departments of agricultural production to do this work well.

We present here only some views regarding the development of agricultural regions and the arrangement of agricultural production in Jiangsu Province based upon work and practice of the past few years in the hope of arousing discussion of and attention to this question.

I. The Objective Material Foundation of Agricultural Regions and Their Dynamic Characteristics

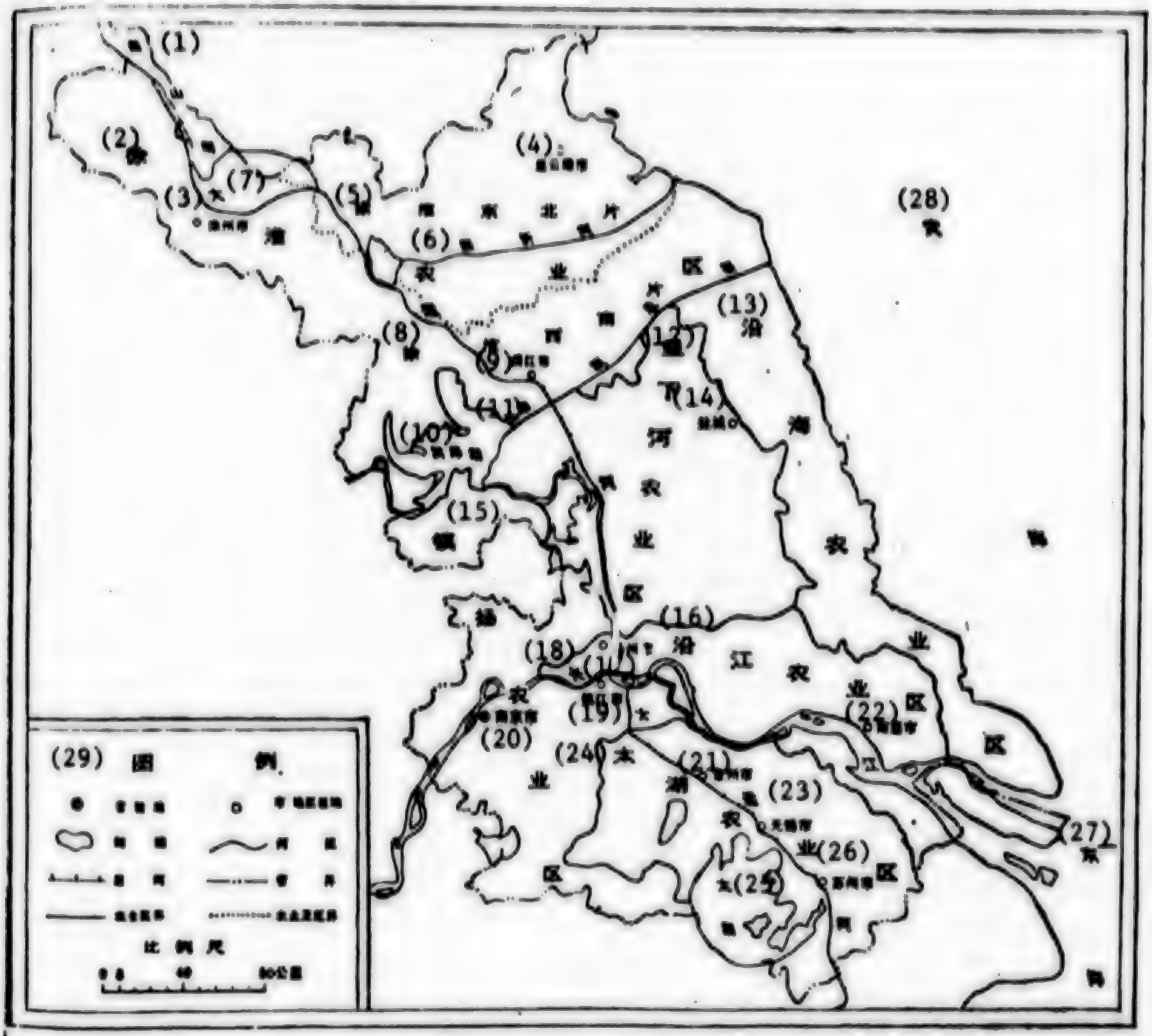
Agriculture is a special material production department. Marx said agriculture is "a reproduction process of the economy. Regardless of its special social character, within this department (of agriculture), it is always the same natural reproduction processes being interlocked together."1)

---

1) Complete Works of Marx and Engels, Vol 24, 398-399.

Related to this is the fact that agriculture has developed from the beginning upon different natural geographical foundations formed by natural interweaving and compounding of zonal and non-zonal regions. Because of this, natural differentiation and segregation of zones of agricultural production were spacially formed during the earlier period of human history. Although agricultural production has always been the outcome of coordination of natural forces, yet production has always been due to human interference and control. The major leading activities are still man's various planned and purposeful measures. Therefore, differentiation and segregation of agricultural production zones are not simply due to differences in natural geographical foundations but also due to the formation of different types of agricultural production and agricultural zones based upon satisfying the needs of society according to the natural conditions of each geographical region and characteristics of economic conditions and the method of diversification.

For example, Jiangsu Province is one of the smallest provinces in the entire nation (over 100,000 square kilometers), and a visible regional difference still exists in agricultural production. The cause of this differentiation is the difference in natural foundations. The province spans from north to south across five latitudes, and spreads over three bioclimatic zones, the warmer temperate zone of deciduous and broad leaf forest--burozem region, the northern zone of subtropical deciduous evergreens and mixed broad leaf forest--the yellow brown soil region, and the central subtropical evergreen broad leaf forest--the yellow brown soil region. Heat and water conditions all change in a corresponding pattern. These regional factors all profoundly affect the planting system, cropping and maturity system, distribution of varieties and even stages of growth and development. Non-zonal factors are also complex. There are different types of delta plains, coastal plains, alluvial plains, and also the low hilly lands and mounds extending into the province from the southwest and the northeast. Also because of varying distances from the sea, the climate in the east and the west is different. The effects of geomorphological conditions have given the hydrological conditions their particular characteristics. These factors are important in basic agricultural construction, soil improvement and crop arrangement. On the other hand, the historical economic foundations of agricultural production of each region in Jiangsu are very different. Agriculture existed in the Xu-Huai area as early as the Qin and Han dynasties but recent development has been slow. The development in the Cheng-Yang hills and the Changjiang Delta also has a long history. Recent arrangement of agricultural production has obviously been affected by capitalism. The history of tilling and cultivation of the coastal plains is less than 100 years. The population density, demands on the soil and for labor, planting habits, industrial bases, and transportation conditions of each region of the province all differ. Natural and socio-economic factors have both led to differences among the methods of land utilization, crop distribution, and sectoral structure of the agricultural regions, and the level of agricultural production and the conflicts in its development which need to be solved are also different. In the early 1960s, Jiangsu Province was divided into six first level provincial agricultural regions based on further generalization and the study of natural zoning of agricultural sectors. After 10 years of practical examination and recent review, zoning of the province into six large regions was proven to be basically consistent with the actual situation.



Agricultural Zoning Map of Jiangsu Province

Key:

1. Weishan Lake
2. Xu Huai agricultural region
3. Xuzhou City
4. Lianyungang City

[Key continued on following page]

5. Northeast block of Xu Huai region
6. Xinyi River
7. Grand Canal
8. Southwest block of Xu Huai region
9. Qingjiang City
10. Hong Ze Lake
11. Grand irrigation canal
12. Lixiahe agricultural region
13. Coastal agricultural region
14. Yancheng city
15. Chengyang agricultural region
16. Yanjiang agricultural region
17. Yangzhou city
18. Changjiang river
19. Chengjiang city
20. Nanjing city
21. Changzhou city
22. Nantong city
23. Wuxi city
24. Taihu agricultural region
25. Taihu lake
26. Suzhou city
27. Donghai sea (East Sea)
28. Huanghai sea (Yellow Sea)
29. Legend

◉	Provincial camp	○	Municipal regional camp
⬭	lakes	~	rivers
┴┴	canal	—··—	provincial border
——	border of agricultural regions		
......	Agricultural sub-regions (border)		

Scale 0 ———— 80 kilometers

According to studies of zoning of agricultural regions in Jiangsu Province, we believe: 1. Agricultural regions exist objectively. They have their own history and pattern of formation, evolution and development. The differentiation of regions of agricultural production is natural. Economic conditions and agricultural production itself are the material foundations of the formation of agricultural regions. 2. Agricultural regions cannot be zoned at will. All theories and methodology must take the objective existence of agricultural regions as a premise. 3. The most fundamental task in the study of agricultural zoning is scientific zoning according to definite principles to recognize the course of formation of agricultural zones based on in-depth investigation and research, and to explain the conditions of formation, the characteristics of the present situation, the direction of development and major technical measures.

In the course of formation and development of agricultural regions, conditions and characteristics of production are constantly changing. Because of differences in historical economic foundations, level of production and the scale of specialization, agricultural regions are separately at different stages (of development) in an ascending order from a low level to a high level. They continuously evolve. This evolution can be fast or slow, but an agricultural region that remains unchanged and stagnant without progressing does not exist. When examining the dynamics of agricultural regions from the point of view of the historical course of development of agricultural regions and their spacial evolution, agricultural regions are always found to possess the following characteristics:

1. Various new features in the sectoral structure of agricultural regions and crop distribution have emerged due to continuous change in the conditions of production. These features may presage certain trends in the future development of production but will not bring about any change in regional boundaries. This type of agricultural region can be regarded as having a rather stable course of development.

2. As production develops, sectoral structure in agriculture and distribution of production undergo a certain degree of change, and some interregional boundaries need to be adjusted, i.e., when development within the regions extends to affect interregional relationships.

3. Through the utilization of natural conditions, reforms and progress in agricultural techniques, the development of agricultural regions enters into a new stage, and within the foreseeable future, their distribution of production will further develop. Such unstable situations as regional differentiation or combination may emerge, and development within a region may lead to overall changes among regions.

The characteristics mentioned can all be proven and illustrated in the agricultural regions of the first and second levels in Jiangsu. This further shows that agricultural regions are not isolated and not stationary. Therefore, after analyzing the present situation in agricultural regions, one must continue to study their probable mobile trends, and at the same time, most appropriate specialization and diversification in the region should be determined according to the needs of national economic development and conditions of production to argue for near future improvements in the structure of agricultural production and set up transitional steps and measures from the present into the future.

II. New Features in the Development of Agricultural Regions in Jiangsu Province

At the beginning of the 1960s, the characteristics of the six large agricultural regions in Jiangsu Province were as follows: The level of production of the Xu-Huai region was low and unstable. Dryland grain crops absolutely dominated the region. The coastal region and the Tanjiang region were the province's important cotton fields, but the level of production in the latter region was higher than that in the former region and diversification was more developed. The plains of Lixiahe, the hills of Chengyang and the plains of Taihu were all agricultural regions producing mainly rice and wheat. But in the plains of Lixiahe, single cropping early and intermediate xian rice was dominant, in the Chengyang hills, double cropping intermediate xian rice and wheat were the main crops, and the plains of Taihu belong to the double cropping rice and wheat region mainly of the late geng variety. The level of production of the Taihu area is high and stable, although the levels of production of the Chengyang region and Lixiahe region have gradually stabilized, they are not high. Development in recent years has brought about new changes in each agricultural region and a series of differences is still maintained among the regions.

For example, the Xu Huai agricultural region has always been historically characterized by floods and waterlogging, high salinity and alkalinity, low yield and frequent disasters. The area of low yield soil constitutes about 45 percent of cultivated land. In addition, the level of application of fertilizers is low, the tilling is not refined, and to adapt to the patterns of drought and flooding and infertile conditions of the soil, a triple cropping system has been implemented with corn, sorghum, sweet potato, soybean and wheat as the main crops. Per mu yield of food grains was only about 200 jin, and the region was not self sufficient in food. Today, the situation in the Xu Huai region has already undergone a profound change. Per mu yield of food grains has surpassed the 500 jin goal stipulated in the "guideline," and self sufficiency and surplus in food grains have been preliminarily accomplished. Efforts of many years to regulate the Huai River have been tremendously effective. The area of high yielding and stable yielding fields is close to half the total of cultivated land. Eight million mu of dryland rice fields have been converted to paddy rice fields, causing an obvious change in crop structure. Rice grains now constitute 43 percent of the total yield of food grains, leading all other food grain crops. The Xu Huai region was the region that developed the fastest among the six large regions of the province according to the rate of development since the 1960s. This historically renown old disaster area had not shaken itself away from low and unstable yields but had risen to a new stage of development. Within a rather short period, the conditions for making the Xu Huai region a new base for commercial food grains have already matured, and it can be hoped that after completion of the sixth five-year plan, the Xu-Huai region will reach or surpass the present level of the Chengyang region. As food grains increase, economic crops and forestry, animal husbandry, fishery and sidelines have also shown great potential for development.

In the Lixiahe agricultural region, floods, waterlogging, drought and sea water that flows backward onto the land were direct causes that limited the region's agricultural development. The Sanhe floodgate, the grand irrigation canal and each floodgate along the coast had preliminarily controlled the flooding of the Huai River and eliminated damage caused by sea water that flowed backward onto land. Flood control of the recent 10 years or more emphasized prevention of waterlogging and development of irrigation. The water conservancy conditions of the marshlands east of the Grand Canal were greatly improved by regulating and controlling the water channels of the four ports[1] at the mouth of Lixiahe and building of the new large Jiangsu pumping station. The threat of flooding and waterlogging in the area west of the Grand Canal was reduced because of widening of the channel for water of Hong Ze Lake to flow into the river. With the addition of other factors such as increasing the application of fertilizers and improving the soil, the 5 million mu of single cropping macerated fields of Lixiahe have all been converted to double cropping fields of rice and wheat as the main crops, and the area of double cropping rice also expanded.

In the past when the Lixiahe region had plenty of land and few people, only a small amount of commercial food grains could be provided to places outside of the region. But now over 1.2 billion jin of food grains can be transferred to places outside of the region each year, and the region has become the third base of commercial food grains in Jiangsu Province. Because cotton is very suitable for improving the soil's physical and chemical conditions in rotation cropping, alternate planting of paddy rice and dryland rice stimulates production increases of food grains and cotton. Therefore the area of cotton fields in the region has expanded year after year to over 1.40 million mu with an annual yield of about 1.4 million tan of ginned cotton, and the region has become the third cotton producing region in Jiangsu. At the same time, the number of hogs raised increased by onefold. But the aquatic products industry which has a great potential has not developed rapidly. Generally speaking, the Lixiahe region has created a preliminary foundation for high and stable agricultural production. If the level of mechanization is further elevated, the pace of development of agriculture can be speeded up. This region will not only become the most hopeful region in Jiangsu Province to increase production of commercial food grains on a large scale in the near future, but it is also possible to expand other sectors of production of cotton, rapeseed, hogs and aquatic products to form a better agricultural structure and a more developed agricultural region.

Another example is the Taihu agricultural region. Its superior natural conditions and economic conditions and its tradition of careful and intensive cultivation have always made Taihu region the richest agricultural region in Jiangsu. The commercial food grains, edible oils, hogs, silkworm cocoons, and fresh water aquatic products provided by the region have all led other regions throughout the province. In recent years, overall planning was intensified and a great effort made to build "fields yielding double the amount specified by the guidelines" and "fields yielding a ton of food grains." A new situation emerged in the fields, forests, roads, ditches and residential areas in many places. The level of agricultural intensification has further elevated. Thus the production of the abovementioned commercial food grains and other items still lead the province and the absolute amounts have also visibly increased from those of the 1960s. Another outstanding characteristic of the change in the farm village economy in Taihu is the rapid development of industries run by communes and brigades. Their production value constitutes above 20 percent of the total production value of industry and agriculture. This has not only provided large amounts of capital for basic farmland construction and agricultural mechanization, but has also found an important path for the labor force released en masse from agriculture to enter new productive realms.

---

[1] Sheyang River, Xinyang Port, Doulong Port, Huangsha Port, which are the four major river channels that lead to the sea.

As to the internal changes in agriculture of the Taihu region, double cropping of rice and wheat was transformed into a double cropping system of double season rice and a combination of wheats, rape and green manure as the main planting system which followed the improvement in the condition of production and especially the success of selective breeding of early maturing rice varieties. A group of communes that produced a per mu yield of "double the amount specified by the guidelines" in food grains and brigades that produced over a ton of food grains per mu emerged. Although the change in the planting system did not change the basic composition of the crops, it has made the distribution of the varieties of crops more complex. This means triple cropping a year of paddy rice varieties including xian, geng and nuo, and in recent years, the addition of hybrid paddy rice, and each season's paddy rice which also includes three crops, an early crop, an intermediate crop and a late crop, spring sown crops which include wheats (wheat, barley, naked barley), rape and green manure, with a visible increase in the late crop. This type of crop structure and method of distribution not only stimulated production increases but also greatly raised the demands for irrigation, fertilization and agricultural techniques.

The situation in the three agricultural regions described above indicates they all possess a different degree of evolution from the original foundation, and as time goes on, this process becomes clearer. Some new evolutionary changes and features have emerged from the other agricultural regions. For example, in the coastal region, emphasis was placed on the improvement of saline and alkaline soils in basic construction of farmland and water conservancy. Saline soil at many places has now been basically desalinized. Distribution of crops has been adjusted many times. The ratio of food grain crops and cotton has tended to stabilize. Techniques of planting cotton have advanced greatly compared with the past. Today, this region is the province's largest cotton region both in area of planting and in yield. At the same time, ocean fishery has also developed greatly. The Yanjiang region has a very dense population. The level of agricultural intensification is about the same as that in the Taihu plain. In the past, the Gaoshatu Plain was a purely dryland crop region. By razing and preparing the land, controlling the water and improving the soil, channelling river water into the region, the area of paddy rice was increased. This is another type of conversion of dryland crop areas into paddy rice regions different from the situation in the Xu Huai region. At present, many types and forms of rotation of paddy and dryland rice crops and interplanting appear. The original characteristic of diversification is still retained, only the areas of beans and peanuts have been reduced because the area of dryland has shrunk. The Chengyang hilly region has emphasized a series of mountain dams and reservoirs and construction projects to channel river water into the fields. The ability to resist drought and prevent floods has been raised universally. At present, it is still the second base of commercial food grains of the whole province following the Taihu region. The distribution of rice crops has also become complex because the double and triple cropping system has been developed in various degrees in the alluvial fields and parts of side fields and in regions along the rivers and river banks in the region of hills and mounds.

III. Changes in Regional Boundaries--Manifestation of the Movement and Development of Agricultural Regions

If one says the real content of an agricultural region is the sectoral structure of agriculture, distribution of crops and level of production, the regional boundaries are its manifestations. The content determines the form. Thus along with the reform of natural conditions and changes in the method of soil utilization, particularly the needs of the national economy, changes in agricultural structure and distribution will necessarily result. Under this kind of condition, the boundaries of agricultural regions will also change naturally to create new regional combinations. Viewed from the other side, zoning of regions always follows the principles of similarities and differences, and boundary lines are drawn at places where the comprehensive characteristics of agricultural production undergo qualitative change. Thus regional boundaries can also be regarded as intermediate zones among regions. Yet, all differences merge in the intermediate stage, all oppositions are mutually transformed via the intermediate link. When the qualitative characteristics of the agricultural region change, its outer edge often shows instability, and appropriate adjustments must be made to more precisely reflect the regional differentiation in agriculture. We have endeavored to explain the region of agricultural regions and some characteristics of the changes in regional boundaries by the following few points:

(1) The trend in the Xu Huai agricultural region to evolve into two first level regions.

The Xu Huai region has historically been studied and zoned as a singular first level region because frequent and many natural disasters occur in this region. The level of production is very low. In 1965, the multiple cropping index was only about 130 percent. Dryland crops were absolutely dominant. These characteristics were all very outstanding at every locality in the Xu Huai region. These are problems that must be solved to develop production and these are also the major bases for zoning this region as a first level provincial agricultural region. But the area of land and area of cultivated land both surpass one-third the area of the province. People engaged in agriculture in the region constitute nearly one-third of the population of the province engaged in agriculture. In such a large area, regional differences objectively exist. But because the level of the economy is too low, natural resources are not fully utilized, the effect of natural conditions of different regions upon agriculture and the characteristics of agricultural production itself are insufficient as a basis for zoning this region as a first level region. The many years of water control and soil improvements have brought about a widespread conversion of dryland crop fields into paddy rice fields and emergence of economic crops and diversification which have developed from the original foundations and differences between the northeast and the southwest of the Xu Huai region have gradually become outstanding. In the future, development of these sectors must of course utilize the original foundation and techniques, but if one further considers the degree of coordination between natural conditions and each agricultural sector, then it will be necessary to divide the Xu Huai region into two first level regions when formulating long range agricultural plans. At the present stage, we can treat them as two sub-regions, the northeast Xu Huai block (Yi Shu river block) and southwest Xu Huai block (Fei Huang He block). Recognizing this developmental trend will help to fully develop the superiority of planned socialist economy, to purposefully stimulate and regulate agricultural regions, and thus hasten the development of agricultural production. The actual differences between the two sub-regions of the Xu Huai region at present are reflected in Table 1. It can be believed that along with the development of production, regional differentiation in the Xu Huai region will become even clearer.

(2) Changes in the regional boundaries of the first level region.

According to repeated investigation, it has been discovered that there are two situations that require changing the boundaries of agricultural regions. One is the resulting change in the regional boundaries brought about by the region's mobile development. The other is the revision after verifying that part of the boundary lines of the original zones do not coincide with the actual situation. The first situation will be explained by citing the changes in part of the regional boundaries of the Lixiahe region and the coastal region.

Lixiahe and the coastal agricultural regions have for a long time shared the Fangongti as the common border. In recent years, new changes have taken place due to the following: (1) As water conservancy conditions improved and as development of basic farmland construction pushed the communes and brigades on the east side of the embankment to convert dryland rice fields into paddy rice fields, the area of paddy rice visibly

Table 1. Table of Regional Differences between the Northeast Block and the Southwest Block of the Xu Huai Agricultural Region

	Northeast block of the Xu Huai Region (Yi Shu river block)	Southwest block of Xu Huai block (Feihuanghe block)
Position	East of the grand canal, Liu Tang He, north of Guan He, mainly the Yishu river valley.	Line along Feihuanghe and parts of the hills and mounds as the major areas.
Natural condition	1. Mostly located in the alluvial plains of the Yishu river valley, and part of the mountain regions and hills of Yuntaishan and Malingshan.	Mostly belonging to the Yellow River flood plains interspersed with some hills and mounds.
	2. It is affected rather greatly by the ocean with annual rainfall of about 900 millimeters, higher than the 100 millimeters of the west. The number of frostless days is 200, 10 to 15 days more than that of the west.	Continental characteristics. It warms up in spring rather early and temperatures drop in autumn rather early. Annual average temperature is slightly higher than the northeast block of the Xu Huai region.
	3. Different geomorphological positions and hydrological conditions caused formation of gang black soil, lake black soil, yellow silt, and saline soil with a slight saline content or desalinized soil of the coastal plains.	Affected by flooding of the Yellow River, sand and mosaic solonetz are widely distributed and interspersed with silt and mixed soil which are soils of slightly higher fertility.
	4. The Yishu River originates from the central and southern parts of Shandong and the amount of water flowing in the river varies greatly, sometimes it floods and at other times the river dries up. The scale of water conservancy projects within the region is small, and the use of water from the Huai River must be	Weishanhu and Hongzehu are large lakes that serve as reservoirs. Most of the water can be used in gravity irrigation. Irrigation with well water is better in the west. In the future, the water in the south that is directed to the north must pass through this region and condition for water conservancy is relatively superior.

[Table continued on following page]

	done by carrying the water in receptacles to the fields for irrigation.	
Production characteristics	1. Paddy rice development has already reached a certain scale but further development is limited by water resources, at present, rice fields irrigated by multiple levels of receptacles which transport water to the fields must be converted to dryland crop fields. Peanuts are the major economic crop (constituting 42 percent of the total in the province).	Most of the paddy rice fields that have been converted from dryland crop fields have stabilized and there is a possibility for further expansion in the future. Cotton, beets and tobacco all have definite centralized areas of production.
	2. There is a foundation for hog raising. A preliminary setup for ocean aquatic production is now in place with a great potential for development. It is a region of concentrated production of woody plant food products and edible oils from chestnuts, walnuts and persimmon and dates.	The foundation for raising cows and goats are good. Concentrated along the Feihuanghe beaches are apples and pears. This is the largest region in the province with a distribution of temperate fruit trees.
Direction of development	It is a base for commercial food grains of early grains and rice and wheat. Emphasis should be on the development of economic crops such as peanuts, rape and remps, and diversification centered around hog raising, ocean aquatic production, forestation for timber and woody plant food products and edible oils.	This is a base for commercial food grains of mainly rice, wheat and (some dryland grains). Cotton, tobacco, beet, and peppermint crops should be actively developed. Diversification should emphasize hog raising, cow raising, fresh fruits and sericulture.

expanded and surpassed the area of dryland grain crops. (2) As changes in the ratio of paddy rice fields and dryland rice fields of some communes on the east side of the embankment caused the planting system to develop towards rotation cropping of rice, wheat, cotton and green manure of the eastern part of the Lixiahe region, the production characteristics became the same as those of the Lixiahe region and differences between this region and the coastal region became greater. (3) The demands for techniques of cultivation, farmland construction and agricultural mechanization brought about by this are all different from those of the coastal region. Therefore, some of the communes east of the embankment in the counties of Yancheng, Dongtai and Dafeng were zoned as part of the Lixiahe agricultural region, and thus the regional boundary shifted towards the east.

(3) Changes in some second level regions.

Zoning of agricultural regions is mostly determined step by step according to the magnitudes of regional differences. Thus the commonality among the lower level regions is uniformly within those of the higher level regions, and their differences are therefore smaller than the regional differences of the regions of a higher level. Thus, when conditions and the characteristics of production change, the lower the level of the regions the easier the changes are manifested. If we reexamine and analyze the 45 second level regions in Jiangsu zoned in 1964 according to present characteristics on an overall basis, it will be discovered that many regional boundaries need to be adjusted, combined or rezoned.

For example, in the Lixiahe region, a highly mixed paddy rice and wheat region was drawn between the Yundong rice and wheat region and the macerated paddy rice region of the Lixiahe hinterland. This region is located at the tail end of the Yundong gravity irrigated region and is the transition region for double cropping fields and single cropping macerated fields. Irrigation by carrying water in receptacles to the fields is rather difficult. Also there are few river channels, few sources of fertilizers, and thus its levels of production and the degree of land utilization are lower than the Yundong wheat and rice region but higher than the paddy rice region of macerated fields. But by building various backbone water conservancy projects, a new river and canal system and an irrigation and drainage system for the farmland were formed, and the Yundong gravity irrigated region expanded to the original highly mixed paddy rice and wheat region. Low yield soils were also effectively improved. This basically eliminated the differences between the major conditions of production of the two second level regions of Yundong and the highly mixed paddy rice and wheat regions. The planting system in the two regions developed mainly into the rice and wheat double cropping and double cropping and triple cropping systems, and the two became relatively high yielding and stable yielding regions of food grains production. In this way, it is unnecessary to continue to consider the highly mixed region as a second level region. The condition for combining it with the Yundong rice and wheat region has completely matured. Although all of the single cropping macerated fields in the hinderland of Lixiahe have been replaced by double cropping (combined with partial double and triple cropping system), the demand for water control in an absolute majority of its diked region has provided features for all aspects of diversification mainly in the development of fresh water aquatic products, and it is still a second level region.

Another example is the zoning of the second level regions in the Taihu region. In the past, the zoned second level regions all possessed some obvious characteristics in the distribution of production because of differences mainly in the types of soils such as highly elevated fields, high flat fields, flat fields, diked fields and drained fields which are hydrologically and hydrogeologically different and have different soil fertilities, and there are also some differences in the level of work loads upon the labor force and the level of work intensity. But at present the ability to resist drought and prevent waterlogging in the Taihu region has been further elevated, and in ordinary years, high yields and stable yields can be achieved throughout the region with per mu yield of food grains in large areas of above 1,200 jin. The development of agricultural mechanization and increased application of chemical fertilizers are relatively even. The difference in the distribution of crops has been reduced from that of the past. Zoning of second level regions based upon soil types is no longer sufficient to reflect the actual situations of the second level regions. Because the sectors of agricultural production in the Taihu region have the characteristics of being relatively centralized due to natural conditions and historical causes, and because the average farming population does not have equal amounts of cultivated land, the amounts of commercial food grains provided are different, the conditions and foundation for the development of animal husbandry are not entirely consistent, thus when considering the above factors according to the differences in natural and economic conditions and according to the scale of providing commercial food grains, the establishment of specialized sectors to develop the potential of sericulture, aquatic products, animal husbandry and fruits to determine the future and zoning of second level regions according these sectors may possess even greater actual significance in reflecting the characteristics of agricultural regions and in setting up production plans.

IV. Several Problems Concerning the Distribution of Agricultural Production in Jiangsu Province

Because agricultural regions are in different stages of mobile situations, at different periods, new problems encountered in the distribution of production will show new features. According to the present situation in agricultural production and the demands for realizing agricultural modernization in Jiangsu Province, all agricultural regions face mainly three common problems listed below in the distribution of production.

(1) The problem concerning the planting system and crop arrangement.

In every region of Jiangsu Province for the past decade or more, the developmental characteristics of planting systems and crop distribution are all manifested by a universal rise in the percentage of utilization of arable land[1]. This has forcefully stimulated production increases in agricultural crops (mainly food grain crops). But in the course of changing the systems, insufficient attention was paid to factors other than production increases, the goals of producing high yields and stable yields, superior quality and less wastefulness, full utilization and protection of natural and economic resources as well as not surpassing realistic conditions of production and the levels of economic techniques. For example, the effects of transient conditions of heat and water between the subtropical zone and the warm temperate zone upon agricultural production in Jiangsu are already obvious. And it is exactly under such conditions that double cropping of rice and wheat in the original region from southern Jiangsu to the Lixiahe area where problems of the amount of heat do not exist was able to extend to the Xu Huai region, and that crop arrangement with the double and triple cropping system as the major planting system was able to replace to varying degrees the original double cropping system in the region from southern Jiangsu to Lixiahe. In this way, intense seasons of farm work emerged on a widespread scale from north to south, and labor intensity increased. At the same time, use of water, use of seeds, use of chemical fertilizers and farm chemicals by each type of farmland increased and the cost of production rose[2]. At many places, green manure and leguminaceous crops were compressed and corresponding measures to nourish the fields were lacking. This also led to changes in the soil's physical and chemical characteristics. All these brought about some new conflicts.

Throughout the province, the key reasons for the existence of the above problems in many regions are the lack of tailoring measures to suite local conditions, often following "one shot" plans and commanding production.

---

1) For example, the multiple cropping index of the entire province rose from 158.2% (in 1965) to 203% (in 1976), and the multiple cropping index of the Xu Huai region reached between 160% and 180%, that of the coastal and Lixiahe regions reached between 180% and 210%, that of the Chengyang hills and the Yanjiang region reached between 220% and 240%, and that of the Taihu region reached 265%.

2) Taking 1976 as an example, the cost of the whole province's agriculture (planting sector) constituted 38.3% of the total revenue of the province. The three agricultural regions of Taihu, Chengyang hills and Lixiahe made up over 40% while in Wuxian of the high yielding Taihu region between 1966 and 1976, net income reduced by 11.5% even though food grain production increased by over 200 million jin, agricultural revenue increased by 8% and expenditures increased by 60%.

In converting dryland crop fields to paddy rice fields in the Xu Huai region, low yielding areas of high salinity and alkalinity and rice crops in waterlogged lands and marshlands were changed and all water needs were assured. All appropriate measures were successful. When the level of production rose to a certain stage, double cropping of rice and wheat was developed as a further step after converting the rice crops in regions with better labor conditions, more fertile conditions and better irrigation. Production increases were also very outstanding. But some communes and even individual first level county units had only partial understanding in guiding ideology when deciding on crop distribution. To them it means that all measures to increase production depend upon converting fields of dryland crops into paddy rice fields. Because of over expansion of the areas of paddy rice, even when all the labor force, chemical fertilizers, and machinery and electrical equipment went into paddy rice cultivation, the need could not be satisfied. This resulted in a lack of fertilizers, missing the period for transplanting, and a lack of management. In recent years, there has always been about 1 million mu of paddy rice fields producing a low per mu yield of below 200 jin and loss in harvests. There are also communes that expanded double cropping of rice when sources of fertilizers were not assured. This was contrary to the original goal, and reduction in yield and in the harvests were even more serious. Because of unilateral emphasis on paddy rice, the original planting customs of increasing production by planting dryland crops were also affected. Also, some dryland crops were forced by a lack of water after transplanting to change their varieties. But still the goals of high yield were not realized.

Now take the double and triple cropping system as an example. The area of double season rice in Jiangsu Province has expanded tenfold during the past 10 years or so, reaching over 13 million mu. Of this, autumn sown triple (cropping) wheat or rape, i.e. "the definite triple cropping" system, cover 70 percent of cultivated land in the Taihu region, between 50 and 60 percent1) in the Yanjiang region, and between 40 and 50 percent in the region of the Chengyang hills and the Lixiahe region. Many advanced communes and brigades in Jiangsu have developed the double and triple cropping system so that per mu yield of food grains reached 1 ton and even "tripling the guideline." This indicates the system has a very great potential for production increases. But this type of planting system not only requires each condition to be highly developed, it also needs a highly intensive organization of field labor. Therefore the development of the double and triple cropping system must bring about a significant jump in the amount of yield before the superiority of this reformed system can be realized. Because the number of frostless days in southern Jiangsu and in the region between the Changjiang and Huai River is only between 200 and 230 days, and the cumulative temperature above 10°C is between 4,600°C and 5,000°C, the amount of heat required by the double and triple cropping system is sufficient but also rather

---

1) The forecrop of some of the late season rice in the Yanjiang region is corn, i.e., two dry crops and one paddy rice triple cropping system.

contracted. In spring, low temperatures and clouds and rain often occur which are disadvantageous to cultivating the seedlings of dryland rice. Drops in temperatures that may occur in autumn are disadvantageous to the safe full heading of late season rice. Sowing, transplanting and harvesting of triple crops of double season rice and wheat are all delayed or pushed earlier than the most suitable period by between 10 and 15 days. The length of soaking of the rice fields is increased by between 40 and 45 days compared to that of the double cropping system of rice and wheat. The soil hardens, its aeration becomes poor, it releases nutrients slowly, and its appetite for nitrogenous chemical fertilizers increases. In addition, the varieties of the double and triple cropping system are greatly changed. All early rice is xian rice. The amount of barley in the wheat types is increased. The economic value and the percentage of conversion to finished food products are lower than the original geng rice and wheat. The real increase in production is what results from subtracting these factors. But many county communes see only the margin of increase in total production and concrete results are not calculated, thus production still remains in a passive position. And in some other county communes, the potential of the double cropping system has not been fully developed, and yet great efforts are made to expand the double and triple cropping system, and for many years, the yield of paddy rice still has not shown any significant change.

Since the above problems were produced by "one shot" measures in crop arrangement, the method of solving the problem of course should not be an overall abandonment but the situations should be differentiated or firmed up or adjusted, or the area of some crops should be lessened according to plan. We will not attempt to further analyze concrete measures to solve the above problem, but it must be emphasized that this type of problem could have been guessed beforehand and could have been solved at an earlier time. From the point of view of development, the planting system and crop arrangement also bring some new problems worth attention (for example, overly complex interplanting in transplanting and combination of varieties disadvantageous to requirements of overall mechanization). Taking measures to solve these types of problems step by step will make the planting system and crop arrangement conform to the uniform biological and environmental patterns and also benefit production increases and increases in harvests, and thus promote the rapid development of agriculture.

(2) Problem concerning specialization of agricultural production.

Specialization, whether in industrial production or agricultural production, is a powerful means to promote development of such production, and is helpful in elevating the rate of production of the labor force. Widely utilizing machinery and equipment is a way to elevate production techniques and raise the quality of products, conserve raw materials, lessen consumption, and reduce cost. Largeness is completeness in industry and business and smallness is completeness are backward forms of productive organization. Smallness in completeness and low efficiency in agriculture within the commune and the brigade are exactly the characteristics of seeking self sufficiency in the small peasant economy. Viewed in this context, without planned and step by step establishment of specialized production in agriculture, the building of a large modern socialist agriculture cannot even be discussed.

Agricultural specialization always selects regions with the most favorable natural conditions, socio-economic conditions and technical conditions of production for development, and to conform to the principles of suiting measures to local conditions, appropriate concentration will necessarily promote regional division of farm labor. Because of the development of specialization, not only is the expending of labor at the center of production of commercial agricultural products lower than at the center of consumption, but also the amount conserved from a comparison of the two surpasses the amount of social labor expended in transporting the products to consumption centers (including live labor and material labor), and this is exactly the reason that specialization can bring about economic benefits.

According to the present situation in Jiangsu Province, the degree of development of specialization of agricultural production of each region is uneven. For a very long time in the past, this problem was given insufficient attention, and appropriate measures were not taken to promote its development. Thus, the supply of commercial agricultural products was far from enough to satisfy the needs of the national economy.

Despite the fact that the degree of agricultural specialization at present is not high, a visible pattern in the stages of development of each agricultural region can be seen, that is, the degree of development of specialization is closely related to the level of production. For example, the Taihu region has always been the largest base of commercial food grains in the province, and has also been the largest base of commercial edible oils, a base of hog raising, sericulture and oranges. Yet these sectors are not evenly distributed. They all have their separate regions of more concentrated production. Sericulture is centered at Wuxi and Wujiang. Aquatic products production is centered at Wuxian. Evergreen fruit trees are centered at Dongting, Dong Shan and Xishan in Taihu. Even in food grain production which is distributed more evenly, there are also several counties whose amount of commercial production is especially large (in ordinary years, over 300 million jin of commercial food grains can be allocated for export to other regions while the proportion of commercial food grains for inter-regional destinations is above 30 percent). According to the experience of other nations in developing certain sectors of agricultural production and the trends in the Taihu region, there are still some sectors which hopefully can realize a high degree of specialization in smaller realms, for example, raising domesticated fowl, high density fish culture in ponds, highly intensive fruit gardens, and in actuality, many county communes have already made concrete arrangements for these in production development planning.

In the past, the Xu Huai region was not self sufficient in food grains. This limited the development of specialization. As the yield of food grains continued to increase, and as it becomes the fourth base of commercial food grains in Jiangsu, commercial production that originally had some foundation such as cotton, peanuts, tobacco, beets, and fruit trees of the temperate zone have shown a great future for development. But to effectively promote the development of these sectors, measures must be suited to local conditions and production should be appropriately centralized to form specialized production as much as possible.

Viewing the sectors, cotton planting is the item constituting the highest percentage as a commercial crop among all kinds of crops in Jiangsu and the item with the largest scale of commercial production. The amount of cotton produced also frequently leads the nation or is the second highest. But the level of production of cotton of each region of the province is not determined mainly by natural conditions but is determined by the degree of specialization and the technical experience of production closely related to specialization. For example, in the Yanhai agricultural region during the early 1960s, except for the Qidong-Haimen region of the south which had a rather high level of production, ordinary per mu yield was only between 40 and 50 jin. Later, the distribution of food grains and cotton production basically stabilized, and cotton fields were concentrated (constituting over 40 to 50 percent of cultivated land). Various technical measures suitable for cotton planting were easily propagated. In the 1970s, the per mu yield universally rose to over 100 jin, and differences within the region were greatly reduced. The entire Yanhai region's cotton fields constituted 37 percent of the total in the province, the production of ginned cotton constituted 45 percent of the province's total, reaching above 4 million dan. Compared to the scattered cotton fields, the level of unit production and its percentage as a commercial product were all much higher. The area of cotton fields in the Xu Huai agricultural region is next only to that in the Yanhai cotton region, but the distribution of cotton fields, except for a few county communes, is scattered. In the entire region, over 80 percent of the communes planted cotton while the number of communes with cotton fields constituting less than 15 percent of the commune's cultivated land was less than 10 percent of the total number of communes, and the number of communes with cotton fields constituting 5 percent of the cultivated land reached 20 percent of the total number of communes. Despite the fact that the conditions for planting cotton in the Xu Huai region were the same as those in the Yanhai region, the unit yield of cotton was 25 to 30 percent less than that in the Yanhai region.

The above situation indicated that whether specialization of agricultural production is implemented produces very different results. The best economic results can be obtained as long as under the guidance of the state plans, the policies of taking food grains as the key link, overall development suiting measures to local conditions, and appropriate concentration are followed, and the most appropriate crops are planted and the most appropriate sectors are developed according to the needs of the state and local conditions. International experience has proven specialization's promotion of the development of agriculture. Most nations of the world that have a high level of agricultural production possess this characteristic, that is, developments in agriculture, forestry and animal husbandry within the boundary of the entire nation are better coordinated, and at different geographical regions there are one or several highly specialized sectors. Specialization is not equal to singularization. Even in such a nation as the United States with a very outstanding singularization in agriculture, there are also trends to establish multiplicity and complexity in the types of agricultural production, and not trends towards the development of specialization of singular crops.

In general, as the production level rises, the specialized sectors of agriculture will expand, not diminish. When all regions have formed specialized sectors in agricultural production, regional division of work in agriculture will become more obvious (and become the important basis for agricultural segregation). The aggregate bodies of agricultural production established upon the basis of specialization, of course, will include diversification. This is not contrary to the full utilization of regional resources and production equipment, but is necessary for promoting the overall development of agriculture and raising labor productivity.

The key problem in realizing agricultural specialization at present is to overcome the deep rooted ideology of small peasant economy. It is this ideology that confines people so that they refuse to learn and dare not follow the demands of modernization to organize large scale production. Of course, efforts should be made to provide the necessary conditions for each locality to realize agricultural specialization. The first is the rational organization of transportation. This greatly affects the realization of agricultural specialization1). The second is that specialization of agriculture requires socialization of production and coordination with several specialized companies. The third is that production techniques and management of agricultural specialization need to be correspondingly improved and reformed.

(3) The problem concerning the rational structure of agriculture.

Every agricultural region should have a relatively rational production structure. Chairman Mao had talked many times about the dialectical relationship among all agricultural sectors, and clearly pointed out: Agriculture, forestry and animal husbandry are mutually dependent, not a single one can be eliminated. The three must be equally emphasized2).

---

1) Shen Daoqi [3088 6670 7871], preliminary exploration of specialization in regional economies and factors affecting them, Chinese geography society, collected papers presented at the 1961 discussion meeting on economic geography, Science Press.

2) Editorial of the PEOPLE'S DAILY of 6 February 1966, the county committee member wants to schedule forestation and forest management on important dates.

Table 2. Composition of the Value of Production of Agricultural Sectors in Jiangsu Province (1976)

unit (%)

Sector / Agricultural region	Farming	Forestry	Animal Husbandry	Sidelines*	Fishery	Total
Xuhuai	78.6	1.7	12.0	6.6	1.1	100.0
Lixiahe	75.6	1.1	11.6	9.9	1.8	100.0
Coastal	79.4	0.7	13.0	4.1	2.8	100.0
Yanjiang	63.9	1.6	14.5	18.9	1.1	100.0
Chengyang	74.5	0.9	14.0	9.5	1.1	100.0
Taihu	61.5	0.8	12.9	23.1	1.7	100.0
Entire province	70.8	1.1	12.8	13.6	1.7	100.0

*sideline production values also include production values of brigade operated enterprises

A rational agricultural structure affects the pace of development of the whole of agriculture. It is also a question which cannot be avoided in realizing agricultural modernization. Solving this problem is more complicated than the task of raising the yield of a certain single crop.

For example, in the total value of agricultural production in Jiangsu Province, plantings have always constituted a very large percentage (70.9 percent). Animal husbandry constituted only 12.8 percent, lower than the national percentage of 13.9 percent. Forestry and fishery are both less than 2 percent. In recent years, due to the rapid development of commune and brigade operated enterprises in the Taihu and Yanjiang regions, the percentage of sidelines has risen to a higher level. If these factors are not taken into consideration, then the differences among the agricultural regions are not obvious.

The above table indicates that whether it is an agricultural region with a high level or a low level production, plantings still constitute the largest dominance (where food grain crops are dominant), and forestry, animal husbandry, fishery and sidelines are very weak. Maintaining this type of agricultural structure for a long period will not be appropriate for raising the people's standard of living and the demand for realizing agricultural modernization. Whether it is possible to initiate some changes under present conditions is to be decided by the following:

First, each agricultural worker in Jiangsu Province has only 1.4 mu of arable land. If the average unit yield in large areas of food grain fields cannot realize a great breakthrough (per mu yield "doubling the guideline" and a ton of food grains per mu), then for some time in the future, plantings will still maintain a rather high percentage. Since the forest area is small, and only a part of the undeveloped land is suitable for forestation and only the open spaces surrounding the four sides of farm villages have certain leeway for development, the percentage of forestry in agriculture will not rise greatly.

Second, because of the situation of food grains, the development of animal husbandry will still depend mainly on the traditional "poor method." Although this method is transitory in nature, it still has exploitable potential. As long as the feeding policy is rational, as long as production of feed crops is actively arranged and water surfaces are appropriately utilized to develop aquatic feed crops, the number of heads of hogs raised can hopefully be increased greatly. There are more market needs for utilizing the grassy beaches and grassy hills in Yanhai, Chengyang hills to raise goats and cows, and in particular, there are more market needs to improve domesticated herds which are the foundation of present farming animals to develop cow herds for both work and meat and for both milk and meat. Thus it is entirely possible to raise the percentage of animal husbandry to over the historical percentage (of 16.5 percent in 1965).

Third, Jiangsu has a large area of water (one seventh of the entire area of the province). The surface area of water suitable for cultivating aquatic products is about 12 million mu. Conditions for cultivation of fishery along the sea coast and beaches and ocean fishery are superior. These resources have a great future for utilization and possess great economic value. Therefore, it is necessary and possible to greatly raise the percentage of fishery in agriculture.

Fourth, in addition to such sidelines as sericulture, tea planting, fruit growing and raising of domesticated fowl which all have definite potentials for development, the handicraft industry originally included as a sideline has developed independently to become a commune and brigade enterprise and has shown a bright future. According to the experiences of farm villages in the Wuxi and Wuxian areas in the Taihu region, a combined system of farming, sidelines (including forestry, animal husbandry and fishery) and industry forming the farm village economy serves greatly to push forward the building of large socialist agriculture and building of new socialist farm villages. All units that produce a high yield of food grains and develop agriculture rapidly have this characteristic. They not only have a high yielding and stable yielding agriculture, a prosperous and developed sideline industry, but also have an industry serving agricultural production and an industry that accumulates capital for agriculture. This kind of practical experience of a close combination of agriculture, sidelines and industry proves to be a necessary course towards hastening agricultural mechanization and the realization of agricultural modernization1).

It can thus be seen that each agricultural sector in Jiangsu Province should first raise the percentage of animal husbandry and fishery in agriculture within a relatively short period. As a first step, these two sectors should be expanded to constitute 30 to 35 percent of the total value of agricultural production. Then based on this foundation, further hikes can be pursued so that the production structure of agriculture can correspond to the steps in modernization.

According to the situation in Jiangsu, it can be seen that a rational agricultural structure must fully utilize natural and economic resources and also must consider environmental protection of agricultural ecology. Traditional experience shows that a growth and decline relationship exists between the utilization of resources and each of the agricultural sectors. Appropriate utilization can stimulate mutual development of each agricultural sector. Inappropriate utilization will often bring about a gain here but a loss there. At present, problems concerning the latter are serious. For example, many lakes and bodies of water of Taihu and the Lixiahe river network and waterways should be good places for developing

---

1) On the second page of the PEOPLE'S DAILY of 3 November 1978, this course must be taken--An investigation of the comprehensive development of the three alliances of agriculture, sidelines and industry in Wuxi, Jiangsu Province.

aquatic products, and as long as planning is unified and utilization is rational, the resources of aquatic products can be increased. But some years ago, enclosing tideland for cultivation has led to lessening of water surfaces and areas for catching fish. In addition, massive gathering of aquatic weeds and dredging up of river sludge for fertilizers have depleted the quality of the water. Water for fattening of fish and for spawning were destroyed. The types of fish with a high economic value lessened, and regardless of how fishing intensity was increased, the yield was still not high. In river network regions where historically production of such aquatic economic crops as water chestnuts, lotus roots, reed and cattail plants were prosperous, yield sharply reduced because of singular efforts to grasp food grain production. This is an economic miscalculation. Again for example, the Yili mountain region in southern Jiangsu is a concentrated region producing bamboo and wood. Because forestry production was not given its proper place, for the past 10 years and more, land for forestry has been reduced by 20 percent. At some communes and brigades, forest lands constitute over 80 percent of the total land of these communes and brigades. But most of the labor force is directed toward food grain production, and the labor force employed in forestry was only 10 to 20 percent of the total labor force employed in agriculture. Also, logging was the main activity, causing the forests to change appearance and replanting and reforestation were relaxed. In some regions destruction of forests and developing waste land even worsened loss and leakage of water and soil, affecting stable yields and assured harvests in agriculture. Therefore, to improve the agricultural structure, the positive and negative experiences must both be studied in depth. Subjective views must not be allowed to decide all and work must not be done carelessly. Engels once warned people not to overly indulge in the spoils from nature. "For each such victory, nature has revenged. In each victory, the first step has always been the attainment of our expected results, but at the second and third steps, entirely unexpected and different effects appeared, frequently cancelling the results of the first step."1) These words still have very great and real significance even today. These are also questions we must take heed of in the course of building a modernized agriculture and improving the structure of agricultural production.

References

(1) Zhou Lisan [0719 4539 0005], Discussion of the formation and evolution of agricultural regions, their internal structure and their zoning systems, Journal of Geography, Vol 1, 1964.

(2) Deng Jingzhong [6772 7234 0022], preliminary discussion of zoning for the present agricultural situation for the entire nation, Journal of Geography, Vol 4, 1963

---

1) Engels, natural dialectics, "Selected Works of Marx and Engels," Vol 3, page 517, People's Press, 1972.

(3) Niemuqinnuofu, Question concerning specialization of production under future disposition of agriculture, Journal of Translations in Geography, Vol 2, 1955.

(4) Robert, Eistar, Modern American Geography, 155 pages, Beijing People's Press, 1976.

9296
CSO: 8111/0603

JIANGXI POPULARIZES VERY EARLY RICE VARIETY

Beijing GUANGMING RIBAO in Chinese 5 Feb 80 p 1

[Article by Fu Hong Ming [0265 7703 2494], Deng Xuegen [6772 7185 2704], and Wang Shaoxiong [3769 4801 7160], "Exceptionally Early Paddy Rice, 'Qingjiang 70 Early' Being Bred and Popularized; Major Results Achieved in the Crossing of Gaoliang and Paddy Rice by Wu Wenhu [0702 2429 5706]"]

[Text] For more than 20 years, Wu Wenhu, a technician in the Qingjiang County Agricultural Institute in Jiangxi Province, has steadfastly worked with rice hybrids and achieved major results. The exceptionally early maturing "Qingjiang 70 Early," which he bred, has been bred and popularized in 16 provinces, municipalities, and autonomous regions. The Qingjiang County CCP Committee has consequently bestowed upon him the glorious title of model special class, and the Jiangxi Provincial Agricultural Science Institute has raised him to the position of assistant researcher.

By daring to break into the forbidden zone of long-range hybridization, Wu Wenhu successfully crossed gaoliang with paddy rice. Following authentication by the All-China Breeding Work Conference, he entered in the All-China Agriculture Exhibition the gaoliang-rice specimen with the large head and thousand grains that he had derived. The exceptionally early-maturing rice variety "Qingjiang 70 Early," which he bred by using the multiple male strains in a single pollination method, matures between 10 and 20 days earlier than most domestic early-maturing paddy rice varieties, and matures 5 days earlier than the "80 early" bred by the International Rice Institute in the Philippine Islands. Additionally it possesses the superior characteristics of strong adaptability and high yields.

After graduating from the university in 1954, Wu Wenhu devoted his efforts to experimenting with rice hybridization. The first research plan that he formulated for himself was to advance into hybridization, to cross gaoliang and rice. Tirelessly he explored and constantly improved hybridization methods. After gaoliang and rice had been pollinated, he would look at them several times each day. When the goaliang-rice heads began to form, he walked through the fields all through the night, stick in hand, to chase away the voles. During the early 1960's, gaoliang and paddy rice were finally hybridized to carry on a single line. While the campaign against the "four pests" was running rampant, Wu Wenhu's work was seriously disturbed, and in order to preserve the seeds of the gaoliang-rice, he slit his cotton-padded jacket and sewed the seeds inside it. Now the gaoliang-rice has divided into 200 varieties. There are high-stem, medium, and short-stem varieties, early-maturing, medium-maturing, and late-maturing varieties, and there are glutinous, sticky, and long-grained nonglutinous varieties.

9432
CSO: 4007

USE OF NEW COTTON VARIETY EXTENDED

Beijing GUANGMING RIBAO in Chinese 5 Feb 80 p 1

[Article by Fan Youde [3769 2507 2638] and Wang Zhaojie [3769 2589 1795], "Lumian No 1' Occupies First Place in Cotton Yields"]

[Text] Our correspondents have learned as a result of the recently convened Shandong Provincial Cotton Production Conference that Shandong Province has decided to popularize the superior cotton variety "Lumian No 1" over a wide area this year. They will extend its cultivation from the 1.2 million mu last year to 7 million mu this year, which is three-fourths the total area planted in cotton in the province.

"Lumian No 1" is a new variety that has been successfully developed by the Cotton Research Institute of the Shandong Provincial Agricultural Institute. Since 1976, this new variety has undergone comparison tests and production tests in cotton-growing areas of Shandong Province, the Yellow River Basin, and the Yangtze River Basin. At all test sites, in different years, and in cottonfields of different fertility, yields have always ranked first. Its yields exceed those of Daizi No 10 by 30 percent or more.

"Lumian No 1" has compact plants, strong bolling traits, and a low rate of boll dropoff. Since it produces large numbers of blooms during hot weather, and since the flowering period is concentrated and the rate of boll formation high, maturation comes early, with much high-quality cotton being formed ahead of the frost. It is fairly resistant to aphid damage and damage from chemicals, and it is a fine variety suitable for expansion throughout the northern cotton-growing region of our country. It is understood that Hebei, Henan, and Shanxi are also actively introducing varieties.

9432
CSO: 4007

PRODUCTION TEAM LEADERS DEMOCRATICALLY ELECTED

Beijing NONGCUN GONGZUO TONGXUN [RURAL WORK NEWSLETTER] in Chinese No 3, 5 Dec 79 p 25

[Report by staff reporter Zhang Xiaoli [1728 1321 3810]: "Before and After the Production Team Leaders Are Democratically Elected"]

[Text] The Renho Commune in Lingshui County, Sichuan Province, has always been a place of abundant fish and rice harvests. Some years ago, because of interference and sabotage by the extreme Left line of Lin Biao and the "gang of four," per-mu production of grain lingered more or less at about 600 catties persistently. After the smashing of the "gang of four," however, this per-mu production of grain shot up to over 800 catties in 1977 and 1978. But, between the different production teams, this production increase turned out to be rather uneven. A few teams continued to linger at the same spot. Although natural conditions in certain team areas happen to be similar, the gap between their respective production outputs turns out somehow to be still quite great. After some investigation and study, the party committee of the commune was of the opinion that the reason the production of some of the teams could not catch up with that of others was, in the crucial sense, because their leading groups were not adequate, and hence the collective will was incoherent, and people's thinking became confused. The following situations can be generally detected in this regard: First, a sizeable portion of the team leaders are men in their 50's and 60's who are often weak and sick; their participation in meetings at the superior level has failed to bring back the spirit there, while at their own subordinate level they have also failed to take the lead in carrying out practical tasks; the result is that they have been simply "dragging along" in performing their duties. Second, some team leaders are satisfied with "attending the stalls;" they are used to following established precedents and the old track in doing their work, and hence they are only "pushed forward" by the masses. Third, the hands of a small number of team leaders are not clean, and they thus fail to be fair in doing things; they would issue commands blindly, and seriously spearate themselves from the masses. Fourth, some isolated individuals would take advantage of their position and their power to deviate from the law and violate discipline; the masses resent them very much. In order to change the outlook of these production teams, the masses urgently demanded the election of some other leaders. The party committee of the commune had done a great deal of work on the production teams and was unwilling to replace these leaders lightly by way of administrative measures; but the cry for the election of others on the part of the masses was very loud. The party committee began to feel the difficulty: if the leaders of the slow-moving teams were not replaced, rapid development of agriculture would be affected. But if the committee were to follow the demand of the masses and carry out democratic elections, if it had not received as yet the "red top" document from the superior level, it must be mindful of the consequence. In December last year, the communique of the Third Plenary Session of the 11th Party Central Committee was published. The Party Central Committee called upon the members to emancipate their thinking and give full play to democracy. Committee members were thus of the opinion that this was precisely the "red top" document of greatest importance that they needed. News about democratic election of cadres at the basic level was also reported in the newspapers. Thereupon, the party committee made up its mind to solve the leading group question in the slow-moving teams by putting into practice the method of democratic election. The secretary of the party committee thus personally went to a notorious "messy team" to investigate its background, telling the commune members there his own thinking. The commune members there responded: "In a team of a few tens of households, the members' minds are clear as to who are good and who are bad. If a good team leader is elected, we will have good days ahead; if a bad team leader is elected, we will suffer one shortage or another. Are we willing to elect a bad one?" With this bit of suggestion, the party committee of the commune became even more firm in its determination to carry out democratic elections. Thereafter, the party committee also discussed the matter with comrades of party branches at the several brigades and found that everybody was in agreement, saying "We should have done this a long time ago." Thus, after this study together with comrades of party branches at the brigades, the party committee of the commune decided to experiment with democratic elections first of all in those 16 production teams where questions concerning the leading groups happened to be numerous so as to obtain relevant experience.

In order to handle the elections well, the party committee of the commune convened a meeting of cadres of various levels to tell them the meaning and the methods of democratic elections, explaining clearly that conditions for candidates must be that they would seek truth from facts, do things fairly, unite themselves with the masses, and be serious about their responsibilities. The cadres and commune members were also organized to discuss these issues. Thus, surrounding the questions of what kind of "masters of the house" to elect and how to select well such "masters of the house," people made full preparations and unified their thinking. Then, nominations were made by commune members themselves, and the method of voting by secret ballot was adopted: whoever should get the most of the votes cast would be elected. Results of the elections were then examined and approved by the party committee of the commune, and formal letters of accession to office were issued to those elected. For those cadres who were not elected, a forum of discussion was also held in time to educate them on how to correctly treat the masses and themselves and how to support the newly elected team leaders, so that no feelings were hurt. During these elections, even elderly women in their 70's and 80's trudged along with the help of walking sticks in order to participate in the voting process. The successful candidates all received a profound education, invariably indicating that they would definitely not alienate trust of the masses and the training of the party. As soon as they left the election meetings, some new team leaders immediately returned to the fields to inspect their production operations and actively sought out members of party cells in the teams to discuss programs of work.

The outlook of the 16 production teams became refreshingly different after these democratic elections. Cadres and the masses became united in grasping production, with cadres taking the lead and commune members consciously abiding by discipline and following direction. There was one "messy team" where production could not be handled well for long periods of time, distribution was not realized, people quarreled with one another, and it was customary for some to take one thing or another away, so that there were profound barriers between the cadres and the masses. After this democratic election there, the new team leader made a point to have every word of his count as soon as he acceded to office. Starting from the establishment of the production responsibility system, he insisted on carrying out the policy of "to each according to his work," led the commune members to manage well pre-spring sowing and also build two viaducts which together measured 5 Chinese li in length in order to assure full capacity planting of rice: all this resulted in a considerable change in outlook for the team. In the past few years, each member of this team was distributed only 30-40 catties of wheat; this year, the distribution has been 120 catties. For the whole year, increase in grain production will reach 30,000 catties. Thus within less than a year, it got rid of the label "backward team" once attached to it.

People now see the benefits of having team leaders democratically elected, so other teams where no such democratic elections ever took place also start to submit requests to party branches at brigades and the party committee at the commune, demanding "permission to follow suit." After cautious considerations, the party committee again decided to specify 18 other teams to conduct such elections. After these democratic elections are held, the feelings of cadres and commune members become even more pleasant, and a very lively situation emerges with production and work in the teams.

While summing up the benefits of having team leaders democraticlly elected, the party committee of the commune mentioned several outstanding changes: One was that the leading groups are now united. A positive air now prevails, while the devious air declines; everywhere one sees a new atmosphere favoring stability and unity and endeavors for production. A second was that the spirit of the cadres is now more collected. In the past people were lazy with their legs, their hands as well as their thinking. Now many have changed to become "diligent in all three," making efforts to acquire talent, pursue production, emulate each other in order to catch up with the more advanced. A third was that people's working style is now changed. In the past some liked to practice "what I say counts;" they gave blind commands and could not bear to hear a different opinion. Now cadres strive to discuss whatever is on hand with the masses, pay attention to investigation and study, start everything from reality, and refrain from doing anything against the interest of the masses. Commune members are now praising this situation, saying: The democratic election of team leaders is fine! The new leaders are "good masters of our house" who are close to our hearts!

9255
CSO: 4007

COUNTY EXPANDS USE OF SCIENTIFIC FARMING

Beijing GUANGMING RIBAO in Chinese 5 Feb 80 p 1

[Article, "Work of Scientific Committee in Baoshan County Becomes More and More Extensive; Accomplishments in Agricultural Science Put to Widespread Use With the Support of the County CCP Committee"]

[Text] By building on its endowments and focusing on the spread of its scientific and technological accomplishments in agriculture, the science committee of Baoshan County, in Yunnan Province, has energetically launched a mass movement for scientific farming and has promoted the growth of agricultural production throughout the county. Its work has become more and more extensive the farther it has gone, and it has received the attention and support of the County CCP Committee.

With the urging and support of the county science committee, 26 communes in this county have set up scientific farming stations; about 90 percent of the production brigades have set up scientific farming brigades, and more than 70 percent of the production teams have set up scientific farming units. By way of improving the scientific and technological levels of these mass scientific farming contingents, the science committee of Baoshan County has operated technical training classes, some of them running for a year, some for half a year, and some for a single season. They have also sent specialists down to the grass roots to learn, have operated specialized training classes, and have helped personnel in the scientific farming network learn about seeds, crop protection, soils, fertilizers, crop growth, and field experiments. More than 10,000 people who are members of the scientific farming network have already received training. This has laid a foundation for the launching of further mass movements for scientific farming.

Natural conditions in Baoshan County are complex, with the arable land throughout the county located at between 800 and over 2,000 meters above sea level. Because attention was not given in the past to suiting measures to local conditions in this county, superior varieties were introduced from outside and spread over wide areas without proper evaluation and appraisal in the local area. Consequently, in some production teams a situation appeared that was termed, "The rice does not hang its head and the corn carries no pack on its back." This dampened the enthusiasm of the masses for engaging in scientific farming. In order to solve this problem, the county science committee sent personnel out to go into these communes and brigades to probe and understand the climate, the soil, and other natural conditions in the local area, and to help the scientific farming network breed and expand use of superior varieties suitable for planting in the local areas. Over a period of several years, more than 10 local crop varieties were bred throughout the country, and from among more than 2,200 superior varieties from outside the area, 96 superior varieties were bred and promoted in the area. In order to solve the fertilizer problem, the county science committee promoted widespread use of humic acid fertilizer, put a lot of effort into experiments in the growing and use of hongping [4767 5493], developed green manure and bacterial fertilizer, and promoted deep application of qiu [3808] fertilizer. As of 1979, deep application of qiu fertilizer had been spread over 70,000 mu, growing of hongping over 50,000 mu of water, and the extension and use of humic fertilizer and bacterial fertilizer over 70,000 mu.

The launching of a mass campaign of scientific farming has promoted the growth of agricultural production. Grain production in Baoshan County has increased at a rate of 10 percent, 12 percent, and 5 percent, respectively, over a 3-year period.

9432
CSO: 4007

ZHEJIANG

GRAIN PRODUCTION BOOSTED BY SCIENTIFIC FARMING

Beijing GUANGMING RIBAO in Chinese 14 Mar 80 p 1

[Article by Lu Liang [4151 5328]: "Zhejiang Province Practices Scientific Farming To Promote Increased Production"]

[Text] Bumper harvests in grain have been reaped in Zhejiang Province for 3 years in a row. In 1977 per mu yields were 1,028 jin; in 1978 they were 1,256 jin; and in 1979 they reached 1,350 jin, for an average annual increase per mu of 107 jin. Such a thing has never happened before in Zhejiang. Recently, in the course of summarizing and reflecting on experiences with increased agricultural production, many prefectural and county CCP committee secretaries and comrades in agricultural and scientific research units who attended a Work Conference convened by the Zhejiang Provincial CCP Committee maintained that in addition to the full readjustment in the enthusiasm of the broad masses of commune members as a result of the genuine strengthening of leadership for agriculture by the Provincial CCP Committee and the party organization at all levels, and most particularly the diligent implementation of the spirit of the Third Plenary Session of the 11th Party Central Committee, the practice of scientific farming, and the steady increase in the levels of agricultural science and technology have been important reasons for the increases.

Adapting measures to local conditions and a rational arrangement of the farming system have also been major measures contributing to the large increases in grain production in Zhejiang Province. After many years of reforms in the farming system, Zhejiang Province has gradually shaped a farming system consisting mostly of three crops each year but with only two crops in some years, or five crops in 2 years. Zhejiang Province has long periods of sunlight; the climate is mild; rainfall is copious; and the frost-free period is long--all of which provide conditions for the development of a multiple crop system of production. For several years, somewhat more than 80 percent of the rice fields throughout the province have undergone a restructuring of their system of cultivation. Many prefectures gradually instituted crop rotation planting wheat (or rape) in wet fields in alternation with rice, or rice in alternation with green manure, or rice followed by more rice, appropriately increasing the ratio of cultivation of spring grain and gradually expanding the three crop system on dry lands. As of now the spring grain area has increased to more than 40 percent of the total area planted to grain, and the area planted to rape has expanded by more than 100 percent. In the dry lands in this province, much of which are distributed in hilly and mountainous regions, efforts are underway to institute in Zhoushan Prefecture a three crop system of intercropping spring grain, spring maize and sweet potatoes (the new three crop on dry land). Experiments for high yields in this system have been extended over more than 100,000 mu, and annual per mu yields of grain have generally increased by from 300 to 500 jin as a result. Since conditions vary from place to place, in setting up specific farming systems in each part of Zhejiang, emphasis was placed on local realities, adherence to suiting measures to local conditions, a spirit of overall planning, rational intermeshing of crops, and not trying to solve all problems with a single method. In Jiaxing Prefecture in the northern part of Zhejiang, some communes and brigades have a lot of land but a scant labor force. Owing to past disregard for conditions in the blind development of a three crop system, extremely sharp contradictions developed in labor force, annual seasons, and fertilizer, resulting in much planting but little harvesting. In recent years, with the rational readjustment of the farming systems and a reduction in the area planted to three crops, per unit grain yields have shown rapid increases throughout the year.

Active spread and popularization of improved varieties, and particularly the spread of hybrid varieties of rice, has been yet another important measure accounting for the striking increases in grain production in Zhejiang Province. In 1976 there were 4000 mu of experimentally planted hybrid rice in all the province. By 1979 this had rapidly expanded to more than 7.2 million mu, with a general increase in per mu yields of about 150 jin over ordinary rice, and maximum increased yields of from 200 to 300 jin. It is understood that in 1979 as a result of this extension alone, increased grain yields amounted to more than 500 million jin. During the past 3 years, total increases in grain production have totaled more than 1 billion jin, which is almost one-third the total yield of the late rice crop. In many places counties whose per mu yields are in excess of the "National Program" (800 jin) have appeared, communes with per mu yields in excess of 1000 jin, brigades in excess of 1100 jin, and production teams and small areas with high yield fields where per mu yields have been in excess of 1400 jin. As a result of a production appraisal carried out in each place, the various crops planted are superior varieties for local areas. Most places in the province have now determined to use No 3 barley as an early crop and "908" and Yangmai No 1 as the favored wheat. The average area planted to these three varieties during the past 3 years has averaged more than 5 million mu, and accounts for 75 percent of the area planted to barley and wheat for an increase over the 3 previous years of 34 percent. For early rice, Guangluai No 4, Junxie, and Wenxuanqing varieties are favored. These varieties have been planted over an average of 9 million mu during the past 3 years to account for 48 percent of the area planted to early rice, an expansion of 16 percent over the previous 3 years. Among late rices, late nonglutinous

Nonghu strain and hybrid rice (Shanyu No 6) predominate. In hybrid maize, Danyu No 6 and "Luqu" are dominant. In 1979, these were planted to maize. These superior varieties have shown average per mu increased yields of about 100 jin when planted in large areas.

In many places, the County CCP Committee secretaries and comrades in agricultural and research units feel that by centering efforts on three high yield crops, bending efforts to grow strong seedlings, using fertilizer and water scientifically, and the prevention and control of diseases and insect pests have played a definite role in the development of grain production.

9432
CSO: 4007

QIANTANGJIANG AREA DEVELOPS MECHANIZED FARMING

Beijing NONGCUN KEXUE SHIYAN [RURAL SCIENTIFIC EXPERIMENTS] in Chinese No 3, 1979 pp 16-17

[Article by staff correspondent Feng Xiang [7458 5046]: "Good News From the Mouth of Qiantangjiang"]

[Text] Exciting good news came from the Haitu Prefecture at the mouth of Qiantangjiang during the autumn harvest in 1978: The mechanization experiment team of the Second Farming and Reclamation Farm of Xiaoshan County in Chejiang province had 34 workers. Excluding personnel in finance and support functions, the team's 23 production personnel planted 2,329 mu of paddy rice. The total yield of single season late rice was over 1,130 million jin. That meant, each person's production of food grains was sufficient to feed 70 to 80 people for one year!

Liberating Ideology; The Hawk Tests Its Wings

For many years this region was a beach where nobody trod. Eight years ago, intellectual youths came here and enclosed the tideland for reclamation. They built Xiaoshan County's Second Farming and Reclamation Farm. But the farm was deeply victimized during the days when the "four pests" were rampaging and production stalled. Up to 1977 the 409 workers of the entire farm including 359 production workers only planted 1,300 mu of land with annual yield of over 560,000 jin of food grains. Each person produced an average of only over 1500 jin. The farm operated at a deficit year after year.

Last year, this farm was changed to a mechanization experiment team with 23 production workers equipped with three tractors (totaling 105 horsepower) and some operational machinery that were not complete sets. The goal proposed was to till and plant the original land and reclaim 700 mu of unclaimed and cultivated waste land. Each worker tilled and planted an average of 100 mu to produce over 10,000 jin of commercial food grains. Compared to the year before, the number of workers was only 1/15 the original number but the total production of food grains had to be revamped. Could this be done? The staff and workers of the entire team, encouraged by the spirit of marching towards the four modernizations and determined to liberate their ideology and stride forward in big steps, decided to realize this goal.

First, they used their own hands to build and rebuild various operational machinery such as plows, harrows and weeders and completed accessories for the tractor. The tasks of reclamation and land preparations were quickly accomplished. The next problem encountered was sowing of paddy rice.

A popular saying says, "strive for the days in spring and strive for the times in summer." Not missing the times for farming is the first task in realizing high yield. Each person planted 100 mu of paddy rice. Transplanting was absolutely too slow. If direct sowing was to be used, a seeder sowing 8 hours could only sow over 40 mu, which was still too slow. This problem also existed in other field management activities such as spraying chemicals to exterminate diseases and insects, weeding and fertilization. What could be done? They decided to learn from the experiences of foreign nations and to use the airplane to take the place of ground operation.

Using the airplane to sow seeds was a refreshing sight. Before sowing, marks were prepared on the ground in the work area. The airplane followed the ground signals and flew at an altitude of 25 meters above the rice field at 160 kilometers an hour. As the plane reached the beginning of the field, the pilot opened the seed spreader and the rice seeds were flushed by the rapid flow of air and spread out evenly and like a shower of "golden rain" fell to the field. A strip of farmland 60 mu in area, 800 meters long and 50 meters wide, could be covered in several dozen seconds in one round trip. When sowing hybrid paddy rice, one flight could sow between 600 and 700 mu and it took only several minutes. If the land strips were longer, the time for the plane to turn around was lessened and the efficiency could be raised even higher.

Sowing by airplane was faster but the amount of seeds sown per mu of hybrid rice was only between 2.5 and 3 jin. Could the seeds be sown evenly? Would the seeds drift? People still had doubts. Results of actual investigation showed that 9 to 10 rice seeds were sown in each square chi when sown by plane. Even skilled hands could not have sown the seeds so evenly. At the same time, since the seeds were dropped from a height of 25 meters above ground, they did not drift easily, and most of the seeds sank half way into the mud. This helped the young seedlings to root and raised the percentage of formation of seedlings.

Using the airplane to spray farm chemicals prevented damage by insects, was fast and the result was good. In the past, mechanized or manually operated sprays were used to control insects. When one sprayed this side of the field, the insects flew to the other side. Using the airplane to spray an ordinary amount of between 4 and 6 jin of chemical solution sprayed over each mu required only 1 to 2 liang of base chemicals. One flight could cover between 300 and 500 mu and needed only over 2 minutes. Spraying several thousand mu of land required only a few hours. In addition, the sprayed mist was fine, density was high, and all destructive insects on leaf surfaces or on the back of leaves, hidden in such places as the base of the stems or flying in the air were all surrounded by the mist of the chemical solution. It could be described as "the net of heaven and earth dropped from the sky and the destructive insects cried out but could not hide." They could not escape the fate of death. During the entire growth season of paddy rice, regardless of when crops were attacked by rice thrips, black tailed leafhoppers, Cnaphalocrocis medinalis, and rice leafhoppers as well as bacterial blight, the spreading of these diseases and insect pests was checked in time and effectively because spraying of farm chemicals by airplane fully maximized their power and the most appropriate time for prevention was grasped. This also helped to prevent the parasitic natural enemies from harm by farm chemicals. Both chemical prevention and biological prevention were taken into consideration.

Tackle Key Problems by Experiments to Eradicate the Two Pests

Protecting seedlings and weeding have always been the two tigers blocking the road for direct sowing of paddy rice in large areas. At this locality, the planting system is continuous cropping of paddy rice and dryland rice with two crops a year. When it is time to sow paddy rice, the high temperature season has already arrived. Saline and alkaline soil coupled with high temperatures constitute a severe test for the young and vulnerable paddy rice seedlings. The key to preserving seedlings is to overcome salinity, alkalinity and high temperatures.

They discovered in experimental observation that the emergence of yellow seedlings and even massive dying of seedlings due to damage by salinity occurred after the two leaves stage. The reason was that the soil at this locality was sandy and easily became hardpan. After sowing, and when a water layer was maintained, the seedlings easily shifted. In production, the field was usually drained and allowed to dry after sowing or the field was irrigated with a shallow layer of water and allowed to dry naturally before sowing. The field was irrigated again only after the young seedlings rooted. Yet, without a water layer in the field and with high temperatures, moisture in the soil evaporated rapidly and the salt content in the soil gradually accumulated in the surface layer. When the saline content in the surface soil reached 0.35 to 0.6 percent, saline damage occurred. The young seedling before the two leaves stage relies mainly on the endosperm for its supply of nutrients, and its tolerance to salinity is still strong. After the two leaves stage, it absorbs nutrients mainly from the soil and saline damage thus emerges. Directing their attention specifically to this problem they irrigated the fields in a timely manner. They irrigated the fields during the day and drained them at night or they maintained a deep layer of water during the night. Then they coupled this with other management measures such as fertilization and finally overcame saline damage and preserved the young seedlings.

After overcoming saline damage, damage by weeds occurred. Ordinarily, this region suffers quite seriously from trifolium, barnyard grass and knotweed. Because hybrid rice was planted, the amount of seeds sown was small and the seedlings were sparse. Conditions for weeds to grow were more favorable. In the past, weeds were removed by hand. Now, weeders were used and the labor force was freed on a very large scale. But the effectiveness of chemical weeding agents changed as soil and climatic conditions changed. If used improperly, the weeding agents may be ineffective or may kill both weeds and seedlings. To overcome the problem of weeding and to find the proper concentration suitable for use at this locality, they made over 40 solutions and tested them on several dozen pieces of land and conducted over a hundred experiments. Finally they found two solutions that yielded better results. One was a solution of 1 jin of 25 percent nitrofene and 1 jin of 80 percent of sodium pentachorophenate used to treat the soil 4 days before sowing. When the young seedling had grown to the 4 to 5 leaves stages, on each mu was applied a mixture of half a jin of 20 percent propanil and 3 liang of aqueous dimethyl tetrachloride. The other was to spray 9 liang of benthiocarb emulsion 4 days before sowing. In this way, except for some nutgrass flatsedge which could be found in the rice fields, other weeds could hardly be found, and the rice seedlings grew healthily and strongly.

Mechanized Harvests Is Clean and Neat

Harvest season arrived. Staff and workers of the whole team saw the land covered with golden grains and spikes swaying in the wind. Their hearts were filled with the joy of a bumper harvest. But could the 20 or so men handle such a large spread of crops which had to be harvested within a short time and wintering crops had to be sown? In past years, harvesting 1,300 mu of rice required 350 people nearly one month. This year, not only was the labor force less than past years, there was more land to cover. Won't everyone have to work to death until the end of the year?

In fact, such worries were in vain. The experiment team used the combine and the situation was not the same.

They used two Pearl River model rice combines with a cut of 2 meters. Each combine was operated by two drivers and two bagging workers. It could harvest nearly 100 mu of rice in 8 hours. The harvesting platform was like a giant hair clipper which cut the rice plants. The rice plants were then transported by a belt to the roller chamber for threshing and screening. Thus the rice grains and the straws were separated, and clean rice grains were placed in prepared bags by the wringer. A man needed only to seal the bags. The straws were ejected from the tail end of the harvester and were evenly spread on the ground to be turned under as fertilizer. Bags filled with grains were delivered by truck or tractors to courtyards of threshing floors. In this way, two machines and eight workers worked for some 10 days and finished harvesting over 2000 mu of rice. The work was clean and neat and easy.

The first battle of the mechanization experiment team had been won. This not only turned the situation of annual deficit around but also created a first surplus. But they were not satisfied. They clearly saw that there was a big gap between the level they reached at present and those achieved by the Second Team of the Fifth Branch Farm of the You Yi Farm of Heilongjiang Province and advanced levels achieved abroad. Some weaknesses were obvious. For example, management work still could not catch up. Eleven management assistants were assigned to the 23 workers and when work was busy, assistant labor forces joined in the work. Machinery was still not complete. Ground operations and airplane operations did not coordinate well enough. Timely supply of farm chemicals was still a problem which was unsolved, etc. They decided that in the new year, they would enhance their achievements, overcome the shortcomings and hasten their march forward.

Yet more importantly, this team discovered during harvest that many pieces of land produced a per mu yield of over 900 jin. This indicated there was still a potential for raising unit yield to be exploited. At the same time, as the national economy develops, as farm machinery is improved, each person can be responsible for even larger farmland. On the northern and southern beaches at the mouth of the Qiantangjiang there are still large tracks of tideland which can be enclosed and reclaimed. To develop 3 million mu using the old method requires a resettlement of 300,000 families (two laborers per family and each laborer plants 5 mu of land). Just for resettling them the state must spend 450 million yuan. If the land is developed by mechanized reclamation, even according to the present level of the mechanization experiment team (each laborer is responsible for 100 mu), only 15,000 families need to be resettled. The preliminary experiments conducted by the mechanization experiment team have shown a bright future for large scale development of tidelands.

9296
CSO: 4007

II. PUBLICATIONS

TABLE OF CONTENTS OF 'NONGCUN KEXUE SHIYAN' NO 9, 1979

Beijing NONGCUN KEXUE SHIYAN [RURAL SCIENTIFIC EXPERIMENTS] in Chinese No 9, 1979 p 32

[Text] Table of Contents

Science and Technology

Techniques of Cultivation of Wheat of a Thousand Jin of Per Mu Yield in the South*, New Varieties of Multiploids of Beets, The 005 Soybean Nodule Bacterial Strain*, The Tiller-Seeder for Corn*... (1)

Electronic Monitor for Sowing*, General Purpose Vegetable Seeder*, Two Innovations of the Synthetic Ammonia Plant*................ (2)

The "7216" Insect Killing Bacteria, The Cotton Boll Worms Virus Insecticide, A New Medicine To Dissolve Thrombus--Uric Hormonal Enzyme.. (3)

Agricultural Mechanization

Give Agricultural Wings--Talking About the Use of the Airplane in Agriculture .... (4)

A Hundred-Year History of the Tractor .... (8)

Getting Electricity from the Sea...................................... (16)

Agriculture, Forestry, Animal Husbandry, Sidelines, Fishery

Cultivating Vegetable Seedlings in "Agar-Agar Paste" .... (11)

Saving Domesticated Animals from the Mouth of Field Rats .... (12)

Hunting for Treasure on the Cotton Seed .... (14)

Migration of Destructive Insects .... (15)

Preventing the Apples from Dropping Before Picking .... (19)

About "Tuopulan" (Poultry Excreta) .... (23)

Industrialized Fish Culture .... (24)

Talking About Fat Crabs in Mid-Autumn When the
Chrysanthemums Yellow--The Life of the River Crab .... (26)

The Walnut on the International Market .... (30)

Medical and Public Health Knowledge

The Intriguing Substance in the Human Body Enzymes .... (18)

Legends About Treatment of Diseases with Medicinal Herbs .... (20)

The Knowledge About Decoct Chinese Medicine .... (20)

Basic Knowledge

Genetic Engineering (Scientific Discussion) .... (6)

Agriculture's "Holdup Team" .... (10)
(Holdup as in Hollywood westerns "Hold-em Up!")
(Article talks about producing antibiotics)

Yeast--An Important Protein Feed .... (22)

The Moon of Home Is Brighter .... (30)

Also Talking about "At Night the South Wind Blows,
Wheat Covers the Mounds and Yellows" .... (32)
(Reader, Writer, Editor)

Science Fair on National Day

Test (7 items) ....

Mental Exercise (5 items) .... (28)

Riddles (18 items) .... (29)

Cover: Enthusiastically Celebrating the 30th Anniversary of the Founding of the People's Republic of China ....
Illustrated by An Shihua [1344 0013 5478]

Cover Two : Different Stomach, Different Function ....
Reillustrated by magazine staff

Cover Three: The Interesting Method of Reproduction of the Stickleback .....
Reillustrated by magazine staff

Back Cover: The Multi-functional Small Tractor ....
Compiled by magazine staff

[*Translated and published in this JPRS report]

9296
CSO: 4007

TABLE OF CONTENTS OF 'KUNCHONG ZHISHI', NOV 79

Beijing KUNCHONG ZHISHI [ENTOMOLOGICAL KNOWLEDGE] in Chinese Vol 16 No 6, 21 Nov 79 inside front cover

[Text] Research Report Experience Exchange

Incidence and Damage of Rice Leaf Rollers in the Saline Lands of Northern Jiangsu Province...Qian Xi [6929 1585] of Dayou Farm of Jiangsu Province.......241

Observation of Genetic Characteristics of Green Rice Bug (Nezara viridula (Fabricius)...Du Ding [2659 3060] of Leshan District Center of Agricultural Sciences, Sichuan Province.......243

Preliminary Investigation in the Prevention and Control Strategy Against Rice Brown Leafhoppers...Ding Zongze [0002 1350 3419] et al of Sushou District Center of Agricultural Sciences, Jiangsu Province.......244

Suvey of Overwintering Rice Brown Leafhoppers...Mei Peijia [2734 1014 1367] of Disease and Pest Survey and Report Station, Xinhui County, Guangdong Province.......246

Use of Phenological Signs for Predicting the Time of Occurrence of First Generation Cotton Pink Bollworm....Wan Shengyin [8001 0524 0603] of Central Station of Disease and Pest Survey and Report, Pengze County, Jiangxi Province.......246

Genetic Regularities and Prevention and Control of Cotton Pointed Bug (Phytoscaphus gosypii Chao)...Wang Jiude [3769 0046 1795] of Plant Protection and Plant Inspection Station, Guantao County, Hebei Province.......249

Preliminary Observation of Sweet Potato Leaf Folding Moth (Cretonia vegeta (Swinhoe)...Huang Chengyu [7806 2052 5940] of Jinjiang District Institute of Agricultural Sciences, Fujian Province......251

Genesis, Prevention, and Control of Rape Bug (Lixus ochraceus Boheman) ...Liu Jubao [0491 5112 1405] of Southeast Jin District Bureau of Agriculture, Shanxi Province....253

Preliminary Study of Chestnut Snowflake Bug (Niphades sp.)...Scientific Research Group of Chestnut,Xishanhe Commune, Xin County, Henan Province....255

Preliminary Observation of Life Habits of Two Types of Bamboo Large Bugs (Cyrtotrachelus longimanus Fairmaire; Cyrtotrachelus buqueti Guer)...Wu Shixiong [0702 1102 7160] of Institute of Tropical Forestry, Chinese Academy of Forestry....256

Preliminary Observation of Willow Shield Scale (Lepidosaphes salicina (Borchs.) of the Northeast Region...Xu Gongtian [1776 0361 1131] of Shenyang Municipal Institute of Horticulture, Liaoning Province....259

Termite Feeding on Trunk of Hardwood Trees--Genus Cryptotermes Banks ...Termite Research Office, Institute of Entomology, Guangdong Province....260

Life History, Prevention, and Control of Carthamus Fruitfly (Acanthiophilus helianthi Rossi)...Fan Ying [2868 5391] et al of Institute Pharmacology, Chinese Academy of Medical Sciences....263

Basic Knowledge of Research on Parasitic Wasps of Aphides (Family Aphidiidae)...Chen Jiahua [7115 1367 7520] of Fujian College of Agriculture....265

Recognition of the Age of Cotton Bollworm Larvae...Zhu Baotao [2612 1405 3447] of Xiao County Disease and Pest Survey and Report Station, Anhui Province....268

Experimental Technique

Preliminary Success in Capturing Flying Insects With Model Target Airplanes...Subject Study Group of Migrating and Flying Pests, Plant Protection Center, Guangdong Provincial Academy of Agricultural Sciences....270

How to Raise Rice Flying Planthopper...Lin Guangguo [2651 0342 0948] of Putian District Institute of Agricultural Sciences, Fujian Province....271

Reconstructing Binocular Microscope...Tang Zuting [0781 4371 1656] of Entomology Teaching and Research Group, Nanjing College of Forest Products Industry....274

Device Installed Under Black Light to Protect Beneficial Insects and to Exterminate Pests...Black Light Group of Plant Protection Teaching and Research Group, Central China College of Agriculture; Hanyang County Survey and Report Station....................................275

Comprehensive Discussion of Special Subjects

On New Progress in Taxonomy...Zhao Yangchang [6392 7402 2490] of Institute of Zoology, Chinese Academy of Sciences...............276

Scientific Activities

General Condition of Research on Pest Resistance by Internal Research Institute of Rice...Wu Rongzong [0702 2837 1350] of Department of Plant Protection, South China College of Agriculture............278

Brief Introduction of New Development of Antichitin Substance TH6040 for Prevention and Control of Pests...Drug Toxicology Office, Institute of Zoology, Chinese Academy of Sciences.................282

Preliminary Report of the Use of Granular Virus for Prevention and Control of Common Cabbage Worm...Virology Office, Henan Provincial Insitute of Microbiology..283

Review of Books and Magazines

Opinions Concerning the Book DESIGN AND ANALYSIS OF EXPERIMENTAL STUDY ON EFFECTS OF AGRICULTURAL DRUGS by Song Zhehe [1345 0772 0735] ...Wang Xiaxiu [3769 7327 0208] of Forestry Branch, Guangxi College of Agriculture...................................284

Brief News of Conferences

Brief Report of National Rice Brown Leafhopper Third Scientific Research Cooperative Conference...Ge Decheng [5514 1795 6134] of Jiangpu County Bureau of Agriculture, Jiangsu Province........... back cover

6248
CSO: 4007

TABLE OF CONTENTS OF 'KUNCHONG ZHISHI', JAN 80

Beijing KUNCHONG ZHISHI [ENTOMOLOGICAL KNOWLEDGE] in Chinese Vol 17 No 1, 21 Jan 80 inside front cover

[Text] Research Report Experience Exchange

Observation of Change of Egg-laying Location of Rice Brown Leafhopper During Heading Stages of Rice...Pu Maohua [3184 5399 5478] et al of Taicang County Disease and Pest Survey and Report Station, Jiangsu Province..1

Observation of Biological Characteristic of Rice Leaf Roller Wasps (Apanteles cypris Nixon)...Gao Fengbao [7559 7364 1405] of Wuxing County Center of Agricultural Sciences, Zhejiang Province....3

Principle of Migration of Corn Borer Larvae and a Study on the Suitable Time for Prevention and Control...Gu Chengyu [7357 2052 3768] et al of Nenjiang Center of Agricultural Sciences, Heilongjiang Provincial Academy of Agricultural Sciences..............................5

Prevention and Control of Corn Borer by Large Area Aerial Spray of Beauveria bassiana B...Xin Huipu [6580 1920 2528] et al of 81 University of Agricultural and Reclamation, Heilongjiang Province..7

Research on Factors Foretelling Ravages of Cotton Boll Worm (Heliothis armigera (Hubner)--Relationship Between Soil Moisture Content and Pupation and Emergence...Zhang Xiaoxi [1728 1321 5032] et al of Plant Protection Department, Nanjing College of Agriculture......9

Vegetative Agent for Retarding Spoilage of the Artificial Feed for Cotton Boll Worm and Its Effects on the Development of the Insect... Insect Virus Group, Mianyang County Microbiological Experiment Station, Hubei Province..13

Experiment on Capturing Cotton Pink Bollworm With Crude Extract of

Small Cotton Bridge-maker (Anamis flava Fabricius) as Bait... Wuhan Institute of Virology, Chinese Academy of Sciences; Fengsheng Brigade, Xiaogang People's Commune, Xiaogan County, Hubei Province..14

Genesis of Black Wheat Stem Wasps (Cephus sp.) and a Study on Their Prevention and Control, a Preliminary Report...Lanzhou Municipal Institute of Agricultural Sciences and Yongfeng Brigade Scientific Research Station of Yuzhong County, Gansu Province...........15

Synthesis of Cabbage Moth (Plutella xylostella (Linnaeus) Sex Attractant and its Preliminary Field Test...Insect Attractant Group, Chengdu Institute of Organic Chemistry, Chinese Academy of Sciences; Taopu Plant Protection Station, Jiading County, Shanghai...........16

Preliminary Report of Observation of Embryological Development of Whiteback Leafhopper of Rice... Lu Wanming [0712 8001 2494] of Plant Protection Center, Henan Provincial College of Agriculture and Forestry...18

Preliminary Investigation of Ovulation Tendency of Army Worms... Zheng Zhaokun [6774 0340 0981] of Liuhe County Disease and Pest Survey and Report Station, Jiangsu Province........................19

Biological Characteristics of Larvae of Two Types of Capricorn Beetles (Aromia bungii Faldermann and Bacchisa fortunei Thomson)... Pang Zhen [1690 7201] et al of Shanxi College of Agriculture......20

First Discovery in China of Short-winged Stand-in Ant King of Domestic White Termite (Coptotermes formosanus Shiraki)...Zhao Yuan [6392 0337] of Guangdong Provincial Institute of Entomology........20

Brief Report of Live Female Moth of Brown-gray Borer Used in a Sex Attractant Test...Li Yongnian [7812 3144 1628] of Ganzhou Sugar Cane Research Institute, Jiangxi Province.........................21

Basic Knowledge

Midges (Order Diptera of Family Tendipedidae)...Ye Cangjiang [0673 3318 3068] of Northwest Institute of Plateau Biology, Chinese Academy of Sciences..22

Introducing Research Studies Concerning the Control Theory of Visual Sensation of Insects...Li Dianmo [2621 0368 6206] of Institute of Zoology, Chinese Academy of Sciences..............................27

Identification of Leaf Roller Moths of Coniferous Forests of the Northeast...Liu Youqiao [0491 0645 2881] et al of Institute of Zoology, Chinese Academy of Sciences.......................................32

Experimental Technology

Artificial Feed for Cotton Boll Worm..Wu Kunjun [0702 0981 0689] of Institute of Zoology, Chinese Academy of Sciences..................36

Experiment on Black Light Return of Labeled Pests...Black Light Research Team, Plant Protection Teaching and Research Group, Department of Agriculture, Central China College of Agriculture; Hanyang County Survey and Report Station, Hubei Province...................38

Special Subject Comprehensive Discussion

Research and Utilization of Biological Control of Agricultural Pests in China...Bao Jianzhong [0545 1696 0022] of Biological Control Research Office, Chinese Academy of Agricultural Sciences.........39

Some Advancement in the Study on the Internal Cholinesterase Suppression Action of Insects...Leng Xinfu [0397 2946 1133] of Institute of Zoology, Chinese Academy of Sciences.............................41

Several Problems Concerning Improving the Pest Control Effect of Trichogrammatid Wasps...Zhang Liangxian [1728 5328 3759] of Experiment Station, Heilongjiang Provincial Shuguang Farm.........45

Development of the Concept of Biological Control in Six Decades... Wang Minhui [3769 2404 1979] of Institute of History of Natural Sciences, Chinese Academy of Sciences...........................46

Scientific Discussions

Investigation of the Problem of Advantages and Shortcomings of Pest Control With Black Light...Plant Protection Station, Jianxin Farm Center of Agricultural Sciences, Hunan Province............48

Problem of Nomenclature for Loquat Yellow-furred Pest...Fang Chenglai [2455 2110 5490] of Institute of Zoology, Chinese Academy of Sciences...37

6248
CSO: 4007

TABLE OF CONTENTS OF 'QIXIANG' NO 5, MAY 1979

Beijing QIXIANG [METEOROLOGY] in Chinese No 5, May 79 inside front cover

[Text] Contents

Meiyu and Its Forecasting in the Middle and Lower Yangtse River
Lin Chunyu [2651 2504 5148].................................. 2

The Analysis and Forecasting of Drought and Excessive Rainfall in Summer in the Middle and Lower Yangtse River
Chen Juying [7115 5468 5391] of Central Weather Station......... 9

A Characteristic of Monsoon Circulation in Early Summer Over the Tibetan Plateau in Dry and Wet Years
Liu Fuming [0491 1381 2494] and Wei Shuhua [7614 3219 5478]..... 12

Spectral Analysis and Its Application to the Mid-Range Forecasting
Fang Cian [2455 1964 1344] (of Ningyuan Weather Station, Hunan). 14

Talks on Numerical Weather Prediction (II)--Models
Fan Yuanrong [5400 6678 2837]................................. 17

Stage Demarcation in Weather Sequence and Its Application to Single Station Weather Forecasting
Xinxiang Regional Weather Station, Henan Province............... 20

On Some Problems in Statistical Forecasting
Li Maicun [2621 7796 2625].................................... 24

Forecasting Heavy Rain in May by Filtering Classification Method
Jian Zhaoyuan [4675 3564 0997]................................ 26

A Summary of Studies on the Cold Cloud Seeding Agent Metaldehyde
Mo Tianlin [5459 1131 7792].................................... 27

The Effect of Sunshine and Temperature on the Growth of Soybean
Liu Hanzhong [0491 3352 0022] (Beijing Agricultural University). 30

The Weather Pattern of Crop Damage Due to Inadequate Sunshine
Zhao Junran [6392 1498 3544] (Liaoning Province Meteorological Research Institute).. 32

Some Features of the Short Wave Infrared Images from Tiros-N
Zhou Fengxian [0719 7685 0103] (Institute of Atmospheric Physics, Chinese Academy of Sciences)........................... 35

AFOS Program of the US National Weather Service
Zhang Xunliang [1728 7460 5328]................................ 37

The Three Stages of the Operational Weather Forecasting Service System
Nai Jin [7845 6651].. 39

Publication News, Restoration of "Acta Meteorologica Sinica"......... 8

10424
CSO: 4007

PUBLICATIONS

TABLE OF CONTENTS OF 'QIXIANG' NO 6, JUN 1979

Beijing QIXIANG [METEOROLOGY] in Chinese No 6, Jun 79 inside front cover

[Text] Contents

A Wind Speed Sensor Based on Heat Transfer of the Short Cylinder With Heating Surface
Cheng Gang [4453 0474] (Meteorology Institute, Central Meteorological Bureau)........ 3

Arch Echo Pattern in a Hailstorm and Its Formation
Chen Liangdong [7115 5328 2767]........ 6

Tornado and Its Detection
Wang Muwei [3769 1970 4850]........ 12

Elimination of Errors of Mercury Barometer in Calibration
Gong Zhengyuan [7895 2973 0337]........ 41

The Division of Long Range Weather Processes
Yang Jianchu [2799 7003 0443] and Gui Peilan [2981 0160 5695]... 15

Analysing Synoptic Stages by Means of Climate Date From Single Station
Zhu Hongji [2612 3163 4921] (Wuxi County Weather Station, Jiangsu)........ 19

Fuzzy Mathematics and Weather Forecasts
Chen Guofan [7115 0948 5400]........ 22

The Tashkent Low and Precipitation in Southern Xinjiang in Spring
Kashi Regional Weather Station, Xinjiang Uighur Autonomous Region 25

A Comparative Analysis of Two Cases of Rain Bearing Synoptic Process
Li Xianjiao [2621 0103 1207], Cang Yunqi [5547 5686 3823] and Xie An [6200 1344]........ 26

Relationships Between Activities of Shear Line in the Tropical Upper Troposphere and the Low-Level Equatorial Westerlies
Wang Yiuheng [3769 0645 1854] and Xu Jianmin [6079 0256 3046]... 29

The Tilt of Vertical Axis of Typhoons and Their Path Direction
Gu Qiangmin [7357 1730 3046].. 32

On the Forecasting of Typhoon Landing Area from Circulation Patterns
Kaiping County Meteorological Station, Guangdong
Guangdong Province Weather Station.............................. 33

Rapid Increase of Total Energy and Heavy Rain in June
Hong Xun [3163 3065] (Taixian County Weather Station, Jiangsu).. 40

Studies on Agroclimatic Classification Abroad
Qi Laifu [7871 0171 4395].. 35

Affect of Temperature and Humidity on the Amount of Peach-Core-Eating Insects
Wei Tong [7614 0681]... 38

TABLE OF CONTENTS OF 'QIXIANG' NO 7, JUL 1979

Beijing QIXIANG [METEOROLOGY] in Chinese No 7, Jul 79 inside front cover

[Text] Contents

Development of Modern Climatic Theories with an Outlook on the Impacts of Human Activities on Climatic Changes
Chao Jiping [1560 4764 1627] 2

Forecasting of the South China Sea Typhoon Trajectories with Single Station Data and Synoptic Charts
Wang Yongxiang [3769 3057 4382] (Central Meteorological Station) and Jiao Peijin [3542 0160 6855] 7

On the Water Vapour Transport Mechanism in the Heavy Rain Situations
Liu Chunzhen [0491 2504 5550] 10

The Effect of Topography on Heavy Rain of Short Periods
Zhao Binhuai [6392 6333 2037] 14

A Case Study of Strong Convective Rain in Central Shandong Province
Zhu Guanzhong [2613 1351 1813] (Tai'an Prefecture Weather Station, Shandong) and Li Xingbin [2621 2622 1755] 16

The Forecasting of the Precipitation Caused by Tropical Lows in Midsummer
Lu Shenhua [0712 3947 5478] (Longxi Prefecture Weather Station Fujian) 19

Analysis and Forecasting of Midsummer Droughts in Baotou Region
Jiang Zhihao [1203 5347 6275] (Baotou Municipality Weather Station) 21

Forecasting of Hails with Energy and Dynamic Considerations
Liu Zhaoxin [0491 2507 2500] (Ju Ud League Weather Station, Liaoning) 23

Talks on Numerical Weather Prediction (III) Objective Analysis and Four-Dimensional Data Assimilation
Fan Yuanrong [5400 6678 2837].................................. 23

The Method of Quadratic Discrimination in Categorical Weather Forecasting
Shi Neng [2457 5174] (Nanjing Meteorology College)............. 27

An Experimental Study on the Impact of Low Temperature on the Earing and Blossoming of Late Rice
Zhao Shengju [6392 5110 5468], Ti Huajie [1132 5478 2638], Zhang Yang Cai [1728 7402 2088] and Lei Kemiao [7191 0344 8693]. 29

Discrepancy in the Rain-Making Evaluations Using Different Statistical Parameters
Feng Chao [7458 6389]... 33

Adjustable Small Cistern Mercury Barometer
Yu Zhixin [0060 3112 0207]...................................... 36

10424
CSO: 4007

END

SELECTIVE LIST OF JPRS SERIAL REPORTS

CHINA SERIAL REPORTS

CHINA REPORT: Agriculture
CHINA REPORT: Economic Affairs
CHINA REPORT: Plant and Installation Data
CHINA REPORT: Political, Sociological and Military Affairs
CHINA REPORT: RED FLAG*
CHINA REPORT: Science and Technology

WORLDWIDE SERIAL REPORTS

WORLDWIDE REPORT: Environmental Quality
WORLDWIDE REPORT: Epidemiology
WORLDWIDE REPORT: Law of the Sea
WORLDWIDE REPORT: Nuclear Development and Proliferation
WORLDWIDE REPORT: Telecommunications Policy, Research and Development

*Cover-to-cover

END OF FICHE

DATE FILMED

5 MAY 80

[redacted] D.D.